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Chase's merger *with Chemical Bank may have led company executives to reevaluate Chase's 1994 network outsourcing deal with AT&T*

Chase rethinks outsourcing deal

By Thomas Hoffman

Frustrated by excess paperwork and bureaucracy, The Chase Manhattan Bank Corp. is moving to renegotiate its 1994 network outsourcing contract with AT&T Solutions and gain more control over its networks, *Computerworld* has learned.

According to sources close to the bank, Chase executives are pushing to restructure the AT&T deal and "repurchase" the 140 or so Chase employees who were transferred to AT&T.

An AT&T executive confirmed that "all the [renegotiation] topics are on the table" but denied

Chase, *page 16*

Sharing IS secrets

Retail project cuts supply chain costs

By Julia King

Forget top-secret forecasting formulas and closed-door planning sessions.

The fastest way for retailers and manufacturers to shorten product cycles and slash inventory costs by millions is to exchange information now closely guarded by both groups.

Sales forecasting

That's exactly what Wal-Mart Stores, Inc. in Bentonville, Ark., and Warner-Lambert Co. in Morris Plains, N.J., have done for the past year under a pilot project, made public last week, known as the Collaborative Forecasting and Replenishment initiative (see related story, page 131).

"The bottom line is, collaboration works in building sales, market share and profitability," said Robert Bruce, vice president of supply chain management at Wal-Mart.

By jointly developing sales forecasts that incorporate infor-

Retail project, *page 131*

Retail rules

- For every dollar squeezed from inventory, companies save **an additional dollar** in warehousing, transportation and other carrying costs every year.
- Retailers currently stockpile between **eight and 10 weeks'** worth of inventory.
- Overall, safety stock or buffered inventories account for about **$700 billion of America's $2.3 trillion retail supply chain.**

Source: Benchmarking Partners, Inc., Cambridge, Mass.

Rumors fuel privacy angst

By Mitch Wagner

Recent incidents of rumors and reports running wild on the Internet have reignited controversy over how to guard against scandal and invasions of privacy online.

The Lexis-Nexis information service was all but shut down last week as it battled allegations spread over the Internet that it flagrantly violates citizens' privacy. Earlier, the FBI and the National Transportation Safety Board were forced to go on television to deny online rumors of a cover-up in the investigation of the explosion of TWA Flight 800.

The incidents have further fueled debate about whether the Internet should be regulated — and even whether it *can* be regulated.

Rumors fueled, *page 15*

Warehouse costs scare up changes

By Craig Stedman
PHOENIX

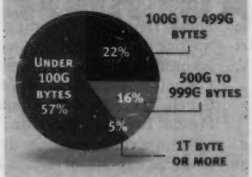
Customers spooked by the cost and complexity of data warehousing are adopting an ease-of-everything mantra that can be boiled down into three components: data marts, World Wide Web browsers and Windows NT.

In interviews last week at the DCI Data Warehousing Conference here,

Warehouse costs, *page 131*

Less is more

How large do you expect your data warehouses to be in the next 18 months?



Base: 541 attendees surveyed at the DCI Data Warehouse World conference in August

Source: Meta Group, Inc., Stamford, Conn.

Clustering spurs vendor lock-in fear

By Jaikumar Vijayan

Users looking to clustering technology to boost the scalability and performance of Windows NT systems may end up locking themselves in to a single hardware vendor, according to industry observers contacted by *Computerworld* last week.

The lock-in potential stems from the fact that the underlying software and emerging interconnect technologies that make clustering work vary from hardware vendor to

Clustering, *page 16*

Not picky

Veritas Software's FirstWatch is one of the first NT clustering products that isn't vendor-specific and can run on any Intel-based server platform.

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Up Front

Rumor central

There's an old joke in journalism about never letting the truth get in the way of a good story. This sprang to mind last week as we were chasing around a sexy rumor that Sybase was secretly up for sale — and that the bidders were IBM, Microsoft and Computer Associates.

The rumor was delivered, as these tales often are, with the utmost sincerity by an industry executive from another company, who'd reportedly heard it from a source deeply tapped in to Sybase. And knowing Mitch Kertzman as a guy who still answers his own phone, I called the Sybase CEO and left a cryptic message designed to make him call back. Bless his heart, he did.

Now the strange media game with takeover/acquisition rumors is that no one connected with the company in question can legally say anything either way. The press knows that, of course, but we have to call and ask anyway. Classic catch-22.

Mitch took the rumor with his usual raucous good humor, realizing as he does that any company in financial rough waters is a target for acquisition rumors. Two things convinced me the rumor wasn't true. One, Mitch just sold his house in the Boston area, uprooting his wife and two kids to resettle them in California this week. You don't do that lightly to school-age children, as any parent will attest. And two, he's fighting like mad to turn Sybase around — hardly the behavior of someone eager to grab the best buyout option.

But this day in the life of a rumor is a drop in the ocean when you consider the Internet, where rumors, disinformation, investment scams or plain old lies can whip around the world with furious speed. As Mitch Wagner's page 1 story points out, incidents such as last week's Lexis-Nexis privacy scandal illustrate the incredible impact of this unfiltered medium. Intriguing rumors that might be derailed with a phone call are instead multiplied millions of times and scattered like airborne germs.

The truth can't get in the way of a good story on the Internet. Who would even know where to post it?

Maryfran Johnson, Executive editor
Internet: maryfran_johnson@cw.com

The 5th Wave by Rich Tennant

"I don't care if you do have a coalition of kids from 19 countries backing you up; I'm still not buying you an ISDN line."

Help pouring in for BCS

By Matt Hamblen

The Boston Computer Society (BCS) may be shutting its doors soon, but there are plenty of offers of help — including some from other user groups.

The Berkeley Macintosh Users Group (BMUG) has posted one such offer at its site on the World Wide Web (www.bmug.org). BCS members can transfer their remaining membership up to one year for free.

The BCS board voted unanimously Sept. 10 to cease operations after several years of declining membership. A board statement said, "BCS has not been able to successfully compete with similar services offered by commercial and even by smaller nonprofit organizations."

Six BCS staff members are working to compile a letter to all members in mid-October that will describe options for members, including what will happen to the BCS Web site (www.bcs.org).

Meanwhile, BMUG is offering BCS members access to its Internet help at both its Berkeley- and Boston-based servers, as well as a biannual 300-page newsletter and help guide, among other services. Organized in 1984, BMUG said it is the largest membership-based consumer advocate Macintosh user group in the world.

BCS Interim Executive Director Frank Smith said potentially 7,000 of 18,000 BCS members will be interested in the BMUG offer because those 7,000 have received BCS' Macintosh magazine. About the only thing BMUG isn't offering that BCS had is local meetings, Smith said.

"I am pleased and gratified with all the offers of help," Smith said. Dozens of companies, individuals and other user groups have offered their time and services, he said.

Some offers have been too good to be true, and others haven't been announced yet, Smith said.

After some initial negative comments, the large majority of the hundreds of calls have been supportive, he said.

As of Thursday, 23 of 47 active BCS special interest groups had posted notes on the BCS Web site that they intend to continue.

News Shorts

DOJ taps Microsoft

Microsoft Corp. acknowledged late last week that the **U.S. Department of Justice** had requested documents related to the Redmond, Wash.-based vendor's Internet Explorer World Wide Web browser. **Netscape Communications Corp.** has charged that Microsoft's marketing tactics are unfair and predatory. Microsoft has denied any wrongdoing.

HP cartridges defective

Hewlett-Packard Co. has revealed that 10% of three types of printer cartridges it produced in April and May are defective and will stop printing sooner than expected. Only a small number of the $32 cartridges were sold. A replacement cartridge will be sent within three working days to users who report failures at (800) 991-4458 or to their retailers. The affected cartridges carry part numbers HP 51626A, HP 51629A and HP 51633M.

McAfee attacks ads

McAfee Associates, Inc. has accused rival **Symantec Corp.** of falsely claiming that its product detects and eliminates all known macro viruses. The charge is based on a test performed by *Secure Computing* magazine, which found that Symantec's Norton AntiVirus detected 48% of known macro viruses, while McAfee's VirusScan uncovered 81%. Last month, Symantec shareholders filed a class-action suit alleging that the stock value was falsely inflated due to misleading ads.

Federal records online

The U.S. government threw open its digital doors last week when Congress passed an amendment to the Freedom of Information Act requiring federal agencies to make electronic records as accessible to the public as paper records.

Lockheed Exchange

Lockheed Martin Corp. has signed **Digital Equipment Corp.** and **Microsoft** to design and implement a corporatewide messaging system for 120,000 users worldwide. The move, costing an estimated $13 million, will replace a mix of nearly 20 electronic-mail systems with Microsoft's Exchange Server running on Digital's AlphaServer systems.

Notes gets Web ties

Lotus Development Corp. is working with eight network management vendors, including **Computer Associates International, Inc., Hewlett-Packard Co.** and **Tivoli Systems, Inc.**, to build support for Notes in to their products. This will let users manage an enterprise network, including Notes, from one location.

Also debuting was Net.Action, which lets users create, maintain and update Web sites on Domino, Lotus' combined Notes/Web server, without Notes, Hypertext Markup Language or Common Gateway Interface script programming.

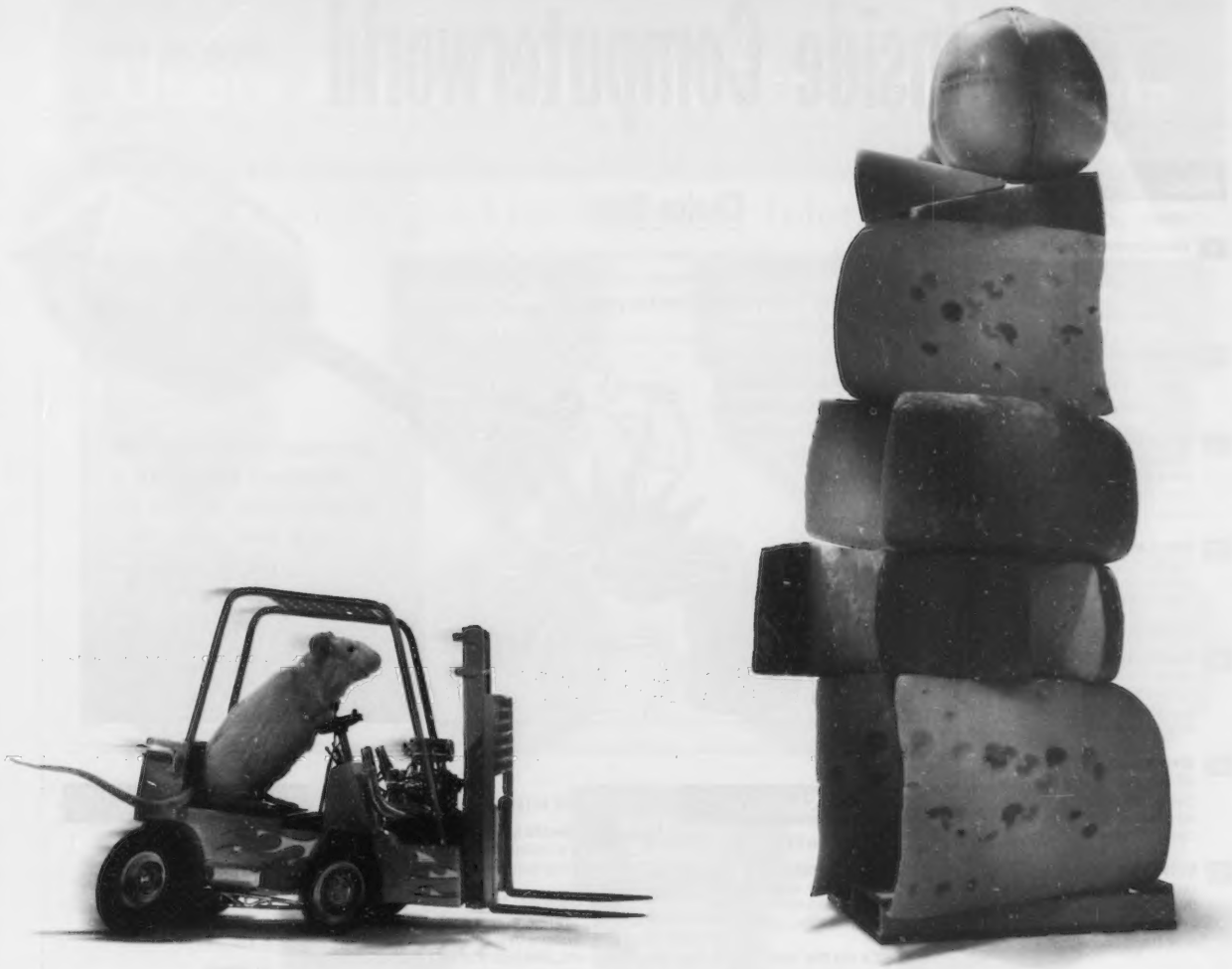
Apple renews Mac OS

Apple Computer, Inc. is expected to release tomorrow an updated version of its Macintosh operating system that addresses user concerns about the overall reliability and performance of Macintosh and Macintosh-compatible systems. Version 7.5.5 of the Mac OS can be downloaded free of charge from Apple's home page (www.info.apple.com).

CIA Web site hacked

Hackers defaced the **Central Intelligence Agency**'s home page last week, renaming it the Central Stupidity Agency and linking it to pornographic sites on the Internet. The server is not attached to classified systems, the CIA said. The break-in is similar to one last month at the **U.S. Department of Justice**.

SHORT TAKES **IBM** said last week it is offering severance packages to "a limited number" of U.S. employees in an effort to cut down on those who don't contribute directly to sales.... **Microsoft** plans to beef up its Windows NT-based SQL Server database next year to handle capacities of 500G bytes or more.... IBM's **Transarc Corp.** subsidiary plans early next month to add promised support for Secure Sockets Layer encryption to the Java-based version of its Encina transaction manager, sources said.



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Users say IBM has made progress in moving DB2 data closer to the Web.
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Blending intranets with cranky legacy systems is a dirty but necessary business.

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Now serving: OpenDoc/Java blend

IBM, Sun and Apple brew 'net/desktop integration

By Sharon Gaudin

IBM, Sun Microsystems, Inc. and Apple Computer, Inc. are teaming up to integrate the Internet with the corporate desktop, hoping to beat Microsoft Corp. to the punch.

IBM last week released an OpenDoc component package that will enable developers to move Internet content, such as Java applets or ActiveX components, into desktop applications.

"That potentially will halve our support costs. Our IT people will be able to put applications up on the intranet for downloading, instead of distributing applications to 5,000 desktops," said the systems manager at a major bank. "That's more than a cosmetic change. That's going to fundamentally change the way IT does a lot of things."

This integration is the first step in an effort to combine OpenDoc technology with Sun's Java Beans initiative. OpenDoc is a standard architecture for plugging together software components to create distributed applications. The Java Beans initiative is aimed at creating a set of component application programming interfaces for the Java platform that will allow developers to build reusable Java components that can communicate with one another.

Together, IBM, Sun and Apple are trying to take the wind out of Microsoft's sails. Microsoft has been touting Memphis, the next commercial release of Windows 95, as the first integration of the Internet with the desktop. The next release, slated to ship in mid-1997, is expected to merge the Windows 95 user interface with the company's World Wide Web browser, Internet Explorer 4.0.

"There's beginning to be some real meat behind the power struggle," said Judith Hurwitz, president of Newton, Mass.-based Hurwitz Group, Inc. "The Internet has been the one thing that has been challenging Microsoft, and Microsoft's enemies are clearly taking advantage of that."

OpenDoc's main rival is Microsoft's ActiveX technology, which is Microsoft-specific. Microsoft has been gaining attention and mind share for its ActiveX components, while OpenDoc followers have been waiting for that technology to pick up some momentum. Several users said last week's rash of OpenDoc announcements may be the push they needed.

"This is huge for us," said David Bowser, distributed information architect at Cummins Engine Co. in Columbus, Ind. "Combining information from multiple sources is vital. Creating a report that has live feeds... imagine that. ... Applications as we know them will fade."

Java and OpenDoc could have competed against each other, but IBM, Sun and Apple have circled their wagons to better battle Microsoft, which is focused on dominating the Internet as it does the desktop, according to Karen Boucher, an analyst at The Standish Group International, Inc. in Dennis, Mass.

"Microsoft wanted to be the first to integrate the Internet with the desktop, and now someone has beaten them to it," Boucher added. "OpenDoc and Java together are very powerful."

The OpenDoc announcements include the following:

- The availability of the OpenDoc WebPak on its Club OpenDoc Web site (www.software.ibm.com/clubopendoc). The component pack, for example, would allow a stock ticker to be downloaded from the Web and dropped in to a report written on a word processor.
- The availability of the OpenDoc Multimedia PartPak, which allows audio or video components to be downloaded from the Web and run on the desktop.
- The beta release of OpenDoc Version 2.0, which extends portability from OS/2 and AIX to Windows NT, Windows 95 and Mac OS.

Java, ActiveX push for platforms

By Frank Hayes

Location, location, location. Like real estate agents scrambling to buy property in every choice location they can, proponents of Java and ActiveX are pushing hard to get their systems for World Wide Web-based software on as many platforms as possible.

Netscape Communications Corp. said last week it is days away from delivering its first support for Java for Windows 3.1 users, and Novell, Inc. gave some users early access to a version of Java for NetWare. Microsoft Corp. has set an Oct. 1 date for its meeting with users and vendors to push ActiveX onto desktop platforms other than Windows.

Counting Java beans

- **Licensees:** 55
- **Commercial software vendors:** 500
- **Applications built using Java:** 10,000 (May estimate)
- **Web pages using Java:** 68,000 (July estimate)
- **Copies of Java development kit downloaded per month:** 90,000

Source: JavaSoft, Cupertino, Calif.

The fact that Java, Sun Microsystems, Inc.'s Internet language, doesn't work on Windows 3.1-based Web browsers has been a thorn in the side of many corporate information systems shops.

"The beauty of Java is it can run on any computer, but the majority of client computers in the corporation are Windows 3.1," said Paul Mahowald, vice president of IS at the Blockbuster Entertainment division of Viacom International, Inc. in Fort Lauderdale, Fla. "Right now, Java applets can run anywhere, except on most corporate desktops."

"There's a lot of Windows 3.1 out there," agreed John Gawkowski, a Java software architect at the Coris division of R. R. Donnelley & Sons Co. in Chicago. "If Java is not on Windows 3.1, there's definitely a hole in the story."

That hole has taken time to fill because both Java and ActiveX were designed for multitasking 32-bit operating systems such as Windows 95 and Unix. Windows 3.1 must also be retrofitted with special support for long file names to run Java applets.

As a result, Java support for several popular environments, including Windows 3.1 and NetWare, has lagged Java availability for Windows 95, NT and Unix. IBM last month put out an early version of a port of Java to Windows 3.1. But corporate IS shops are more interested in Netscape's version, which is slated to be in users' hands in less than a month.

Meeting of the minds

Meanwhile, Microsoft — which has no plans to put ActiveX on Windows 3.1 — will meet with users and other software and systems vendors next week to announce licensing terms for ActiveX. The vendor is also gathering input on how to put ActiveX in the hands of a standards organization.

Microsoft originally planned to hold that meeting in August but bumped back the date to make sure it was properly organized, said Cornelius Willis, group product manager for Internet development tools at Microsoft.

Still, not all corporate developers mind the delays. An IS executive at a manufacturer that is committed to Windows-oriented development said ActiveX isn't even in his company's plans, mainly because the technology is still too raw to use.

And in the words of a systems analyst at a major pharmaceutical company, "With the current state of Java, I don't know if Windows 3.1 support is really a big deal at this point. We have lots of Windows 3.1 desktops, but our Java projects right now won't have a big impact on them."

IS to vendors: Don't mess with browsers

By Kim S. Nash

Microsoft Corp. started shipping a free browser customization kit last week to compete with a similar tool from Netscape, but IS wants little to do with the products.

Modifying World Wide Web browsers lays waste to one of their biggest draws: a generic user interface. It also adds development time and residual administration hassles to intranet projects, several information systems managers said last week.

Web access

"When [IS] puts our hands on it, we lose the power of the open Web technology that you can swap in and out, which is what we were looking for in the first place," said Pete McGarahan, director of technical planning at Taco Bell Corp. in Irvine, Calif.

Specialized buttons, menus and other features make a simple interface complicated — reminiscent of difficult client/server deployments, said Mike Albert, chairman of the Web advisory board at Bechtel Group, Inc. in San Francisco.

"You run into complicated support issues and delivery of the clients," Albert said. "That brings up client/server issues all over again. We spend enough money on that already and don't want to add any more."

Netscape Communications Corp. and Microsoft are quick to point out that IS can also use the kits to alleviate some browser management hassles before distributing browsers to end users.

Indianapolis-based Eli Lilly & Co. has done that for its 9,000 intranet users. "But it's really a minimal customization," said Dena J. Haritos-Tsamitis, a manager in the intranet services group at the pharmaceutical firm.

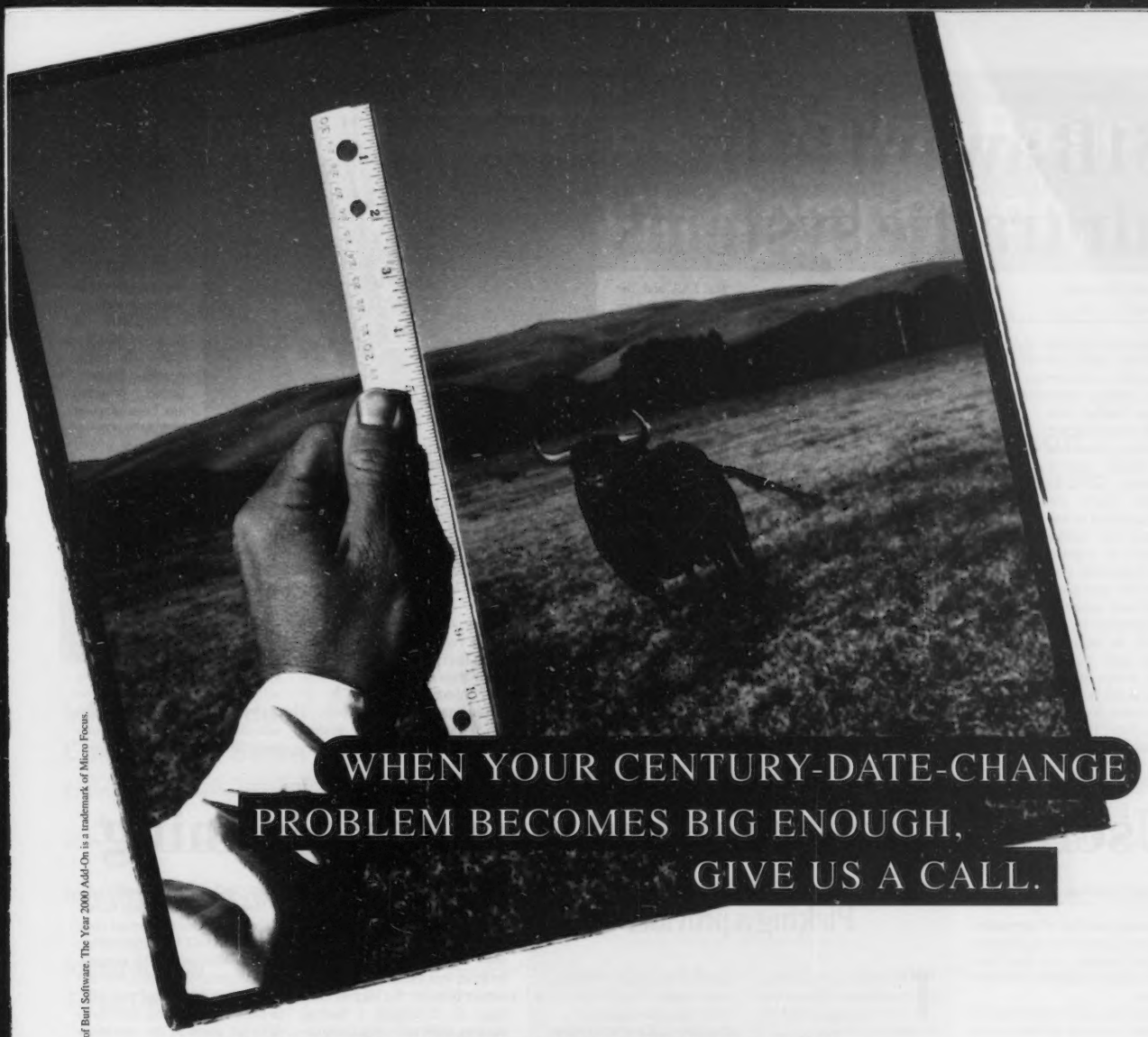
Software and communications vendors, meanwhile, use the kits to make their own imprint on the Microsoft and Netscape browsers they redistribute.

But fiddling too much with browsers is a bad idea for IS, said Tim Sloane, an analyst at Aberdeen Group, Inc. in Boston.

In particular, Sloane said, companies with multiple desktop platforms should watch out for modifications that may perform differently on Windows, Macintosh, Unix and other systems.

Instead, custom interface capabilities should be built in to intranet applications, not browsers, said Walid Mougayar, president of CyberManagement, Inc., an Internet consulting firm in Toronto.

E-mail vendors pitch array of clients. See page 71.



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$1B award to fix air traffic systems

By Gary H. Anthes
WASHINGTON

After nearly a decade of mismanagement, faulty software and billion-dollar cost overruns, the Federal Aviation Administration is taking another stab at modernizing the nation's antiquated air traffic control systems.

Last week, the FAA awarded an estimated $1 billion contract to replace the 20-year-old systems that control air traffic near airports. The systems are expected to improve safety and reduce flight delays at 371 airports and military bases, with installation stretching out to 2007. The first commercial installation will be at Boston's Logan Airport in 1998.

The systems will support safety enhancements urged by the recently appointed presidential commission on aviation safety, Transportation Secretary Federico Pena said.

A pittance

The huge Sperry-Univac 8300 computers that process radar data in air traffic control centers have just 256K bytes of memory, according to *Scientific American*. If they were PCs, that wouldn't be enough to run the PC game Flight Simulator.

The prime contract went to Raytheon Co. in Lexington, Mass., which will supply software for processing and displaying radar data for aircraft within about 50 miles of airports, where the congestion is greatest. Computer systems will come from Sun Microsystems, Inc. and backup software from Hughes Aircraft Co.

The system, the Standard Terminal Automation Replacement System (STARS), will be used by the FAA and the U.S. Department of Defense.

Although most experts say the U.S. air traffic control systems are safe, they are neither 100% safe nor 100% reliable. Ancient computers, which fail often, are backed up by systems that lack many of the primary systems' safety features [CW, Aug. 5].

The Raytheon software will run simultaneously on four Sun computers at each facility so that one primary and backup pair is mirrored in a second primary and backup array. The Hughes backup software can be used if bugs stop the Raytheon software from working properly.

Boston's Logan Airport *is the first airport slated to be upgraded*

When asked to assess the importance of the Raytheon contract, Barry Krasner, president of the National Air Traffic Controllers Association (NATCA) in Washington, would say only, "I don't care where the system comes from, as long as it works."

A source at NATCA, the controllers' labor union, said he had plenty of confidence in Raytheon but considerably less in the FAA's ability to manage a big systems development effort.

Conceived in the mid-1980s, the FAA's air traffic control modernization program has been plagued by huge cost overruns and missed deadlines. In 1994, the $7.6 billion program, which included what has now become STARS and two other systems, was downsized and restructured.

Many of the overruns stemmed from complex requirements that had to be built in to millions of lines of custom Ada code. As a result, in addition to scaling back requirements, the FAA began searching for existing software that could be tailored to its needs.

Users fall short on 'net security planning

By Gary H. Anthes

A growing number of companies are putting important applications on the Internet, but few have backup plans to deal with network failures.

"There is unbelievable trust in [Internet service providers] to provide security and redundancy that just isn't there," said security expert Robert Campbell, managing director at Peak Consulting in Woodbridge, Va.

Campbell said risks are compounded because service providers often rely on dozens of network subcontractors and resellers, each with its own vulnerabilities. "Corporations are rushing to put mission-critical functions on those networks to the extent that colossal disruptions and losses are inevitable," he said.

As companies put vital customer services on the 'net, the potential for losses is growing. But ignorance of the risks — and the difficulty of crafting Internet disaster recovery plans — is leaving those companies exposed, experts said.

"We had a 10-minute outage by our Internet access provider last week, and that is just not acceptable," said an information systems manager at a large insurer that offers several services over the Internet. "From our customers' point of view, we didn't exist during those 10 minutes."

The risks of Internet use have been spotlighted recently by a rash of problems, including an all-day outage at America Online, Inc. and a prolonged crippling of Internet service provider Public Access Networks Corp.'s Panix service.

Vienna, Va.-based America Online went off-line because of bugs in a software upgrade. New York-based Panix was brought to its knees for several days by a hacking incident that directed a torrent of bogus information requests in a "denial of service attack" against the servers.

Despite these and other hazards, IBM found in a recent survey of 226 business recovery managers that fewer than one in 10 had an Internet recovery plan — in part due to the complexity in controlling Internet access.

The plans aren't easy to develop, partly because corporate Internet connections and applications are often in the hands of far-flung end users. Asked in the survey to name the biggest challenge to developing a backup strategy, most said it is gaining cooperation from business units.

Banks, which are moving aggressively into electronic commerce, are particularly vulnerable to Internet outages.

Albert Belisle, former chairman of the American Bankers Association's information security committee, said banks are going out on a limb by offering services on the Internet. "The Internet is attractive because it's kind of free," he said. "If reliability is not a concern, it should be."

Belisle advises banks not to rely on the Internet for mission-critical applications such as communications between headquarters and branches. For those, banks should depend on the more reliable, albeit more costly, leased telephone lines, he advised.

More advice came from Robert Hagens, director of Internet engineering at MCI Communications Corp. in Washington. He suggested that users with critical Internet applications buy added reliability in the form of diverse circuits to different parts of the provider's Internet backbone.

Security

Companies that are concerned about losing their World Wide Web services to customers could mirror their Web servers at multiple points on the backbone as well, Hagens said.

An IS manager at an insurance company said his firm has redundant connections to its local service provider via a fiber-optic Synchronous Optical Network ring. But the company's ability to ensure reliability ends at the Internet service provider.

"We've grown so used to having a private data network that we can control the performance of, and the sporadic performance of the Internet is definitely a cause for concern," he said.

Picking a provider

The Yankee Group in Boston offered this advice for users looking for an Internet service provider:

- Consider a provider that offers a firewall service and other security services.
- Ask for performance guarantees, particularly for intranets, in which the provider controls traffic end-to-end.
- Ask about the geographic distribution, staffing and capacity at the provider's points of presence.
- Ask about the capacity, redundancy and migration plans for the provider's backbone and nodes feeding it.
- Check out customer support; insist on 24-hour service seven days per week if you need it.
- Look for a provider that is financially sound.

— Gary H. Anthes

Developer/2000™ Beats Visual Basic in InfoWorld Tools Comparison

The rigorous InfoWorld Product Comparison recently tested Oracle Developer/2000 and Microsoft Visual Basic to find which one "wouldn't crack under the pressure of scaling to the enterprise." After a battery of tests, InfoWorld concluded: "Our standout winner, Oracle Developer/2000..."

InfoWorld Product Comparison Score
Enterprise Development Tools

	Oracle Developer/2000	Microsoft Visual Basic
InfoWorld on Scalability	"Developer/2000 performance... convinced us that it was prepared to scale..."	"...Visual Basic just didn't have... scalability."
InfoWorld on Team Development	"Developer/2000 leads the pack in data-repository-based development."	"We feel this is an area where Visual Basic needs work."
InfoWorld on Database Programming	"Developer/2000 is packed with tools that make it the strongest... in transaction building."	"Visual Basic... transaction-building capabilities weren't ready for enterprise-wide applications."
InfoWorld on Reusability	"We were quite impressed with the wide range of object-reusability tools offered by Developer/2000."	"...Visual Basic's object reusability features (are) inefficient and tedious."
InfoWorld on Productivity	"... Developer/2000 is packed... for productivity. Developer/2000's most notable tool... is its unique drag-and-drop application partitioning capability."	"...Visual Basic... lacked the perks provided by Developer/2000."

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InfoWorld Product Comparison results as of June 17, 1996.

Buyers see more sources of back-to-basics PCs

By Justin Hibbard
SANTA CLARA, CALIF.

On the eve of the fourth-quarter buying frenzy, corporate buyers may be pleasantly surprised to find more alternatives to pricey, feature-laden PCs.

These products are aimed at corporate customers who need basic systems for low-level users, said analysts at International Data Corp.'s (IDC) PC Market Outlook conference here last week. The Framingham, Mass.-based research firm predicts a surge in sales of no-frills PCs priced to compete with inexpensive network computers, such as Wyse Technology, Inc.'s Winterm and other as-yet-unshipped Internet appliances that are expected to cost between $500 and $1,000.

"MIS shops are saying, 'Give me a PC that's $1,200 and Pentium-capable,'" said IDC analyst William Zinsmeister. In response, vendors are offering products such as Acer America Corp.'s AcerEntra, which comes with a 486 or Pentium processor and starts at $800.

Competing against cheap PCs from name-brand vendors are custom-built PCs from no-name vendors. "The greatest grassroots catalysts for low-cost PCs are the 'screwdriver' shops," said IDC analyst Bruce Stephen. Such shops buy components and assemble systems according to customers' orders. They often provide extensive warranties and service as well.

"These guys operate on a shoestring," said IDC analyst Eric Lewis. "They build mainly 486- and 586-level machines with cheap processors from companies like Cyrix [Corp.]"

1996 U.S. PC pricing trends

- **Rapid decline** in component costs
- **New entrants** increasing competition
- **Processor price decline** slowing down
- **Price of portables** firmer due to shortages

Source: International Data Corp., Framingham, Mass.

Mark Latham, MIS director at Cellular One in Durango, Colo., has bought many PCs from Professional Computer Solutions, Inc. (PCS) in Durango. "I've been very impressed with their service," he said. PCS' prices are comparable with those of Compaq Computer Corp., Latham said, but he buys from PCS because it can provide immediate on-site service.

But Steve Koss, IS manager at the Oakland Coliseum in Oakland, Calif., expressed caution about screwdriver shops. "You may save dollars up front, but in the long run, it's going to cost you," he warned.

Koss said custom-built PCs are often incompatible with products from recognized vendors. For example, when he tried to install PCMCIA cards in no-name PCs at his company, Microsoft Corp. couldn't provide drivers because the PCs weren't on its standards list, he said.

IDC analyst Joseph Loiselle said the business model of direct PC seller Dell Computer Corp. is derived from that of screwdriver shops, which partly accounts for Dell's low-price leadership. But Dell offers fewer custom configurations than the shops because of its huge production volume. "They offer you a price advantage to go with their configurations," Loiselle said. "If you're talking a real custom configuration, the [value-added resellers] are still going to play a role in that."

Of course, customers who want inexpensive PCs from their favorite reseller can buy discontinued models at closeout prices, another low-cost alternative that IDC analysts identified. Because of this standard practice, few resellers will offer low-cost PCs such as the AcerEntra, Loiselle said. "The Top 10 players are going to be a bit slower in dropping down to a real bare-bones system," he said.

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Output Technology Model 4730	1,062 300 lpm	$2595	Parallel/Serial Twinax/Coax Optional	20,000 hours at 100% duty cycle	60,000 pages per month	YES
Epson DFX 8000	1,066 cps	$3499	Parallel/Serial Optional I/O Adapter	8,000 hours at 25% duty cycle	11,000 pages per month	NO
Output Technology Model 850XL	850 cps 240 lpm	$1995	Parallel/Serial	19,200 hours at 100% duty cycle	48,000 pages per month	YES
Output Technology, Model 850XLE NEW	850 cps 240 lpm	$2295 $2995	Parallel/Serial Twinax/Coax and Parallel/Serial with Auto-Switching	20,000 hours at 100% duty cycle	55,000 pages per month	YES
Output Technology Model 800MTP NEW	800 cps	$2095	Parallel/Serial	10,000 hours	48,000 pages per month	YES
Okidata 3410	550 cps	$1999	Parallel/Serial Twinax/Coax Optional	8,000 hours at 25% duty cycle	Not published	NO
Epson DFX 5000	504 cps	$2089	Parallel/Serial	8,000 hours at 25% duty cycle	6,000 pages per month	NO
Genicom 3810S and 3910IS	500 cps	$2125 $2999	Parallel/Serial Parallel/Serial or Twinax/Coax Non/Auto-Switching	10,000 hours at 25% duty cycle	Not published	NO

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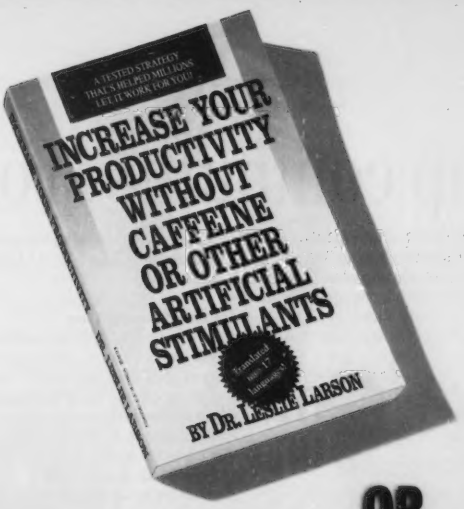

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Key #15612

Engineer title trips up computer pros

By Julia King

After spending five months and $7,500 on training, 25-year-old Seth Grainger is just three tests shy of earning his certification as a Microsoft Systems Engineer.

But putting that title on his business card could cost him his job at Grainger Consulting, his father's engineering firm in Mesa, Ariz.

"If he insisted on using that title, he'd have to go off on his own. At the same time, I'd write a letter to the state board telling them he's in violation of the rules," said Scott Grainger, Seth's father, boss and a licensed fire protection engineer.

"That would be an extreme, and I wouldn't expect it to get to that," Scott Grainger said. "But it is conceivable."

The clampdown

This is an issue because Arizona — and every other state — has laws prohibiting computer professionals from calling themselves engineers [CW, May 30, 1994].

And now, several states are starting to crack down on certified Microsoft Corp. Systems Engineers and Novell, Inc.'s more than 90,000 Certified NetWare Engineers (CNE) and 5,000 master CNEs.

State regulators in Texas have notified the vendors about the title laws and issued cease and desist orders to individual networking and software professionals. Most have complied with the law, but those who don't can be fined up to $4,000 and spend a year behind bars, said John Speed, executive director of the state's Board of Registration for Professional Engineers.

"We have gotten criminal convictions, and in some jurisdictions, depending on the case, the district attorney has upped the charge to a felony," Speed said.

Regulators in Illinois have slapped Novell with an administrative order that demands the vendor drop the engineer reference in its CNE title.

Novell's response is, "We appreciate that people need to be protected from hiring bogus engineers to build bridges or chemical plants, but you're not going to hire a software engineer to build a bridge," said Harrison Colter, an attorney for the networking vendor.

"Our primary argument is that we don't think there is any confusion about the term," Colter added.

Nevertheless, Colter said Novell has a contingency clause in its contracts with CNEs that recommends professionals drop the word engineer from their title if a regulatory board in their state prohibits its use. Microsoft declined to comment on its position.

Seth and Scott Grainger *must abide by strict certification laws for software engineers in Arizona*

In a nutshell, the state title laws prevent anyone other than people educated and licensed in one of 36 recognized engineering disciplines from claiming to be an engineer.

Fraud protection

Proponents of the laws, including the National Society of Professional Engineers (NSPE), say the laws were enacted to protect the public from fraud and substandard work. But the catch-22 is that hardware, software and networking aren't among the disciplines recognized by states or the NSPE.

Further complicating matters is that a group formed to develop standards for these information systems disciplines is making slow progress in an industry marked by lightning-fast change.

And that group's efforts are a waste of time if you ask Boris Beizer, a software quality and testing expert who is well-known throughout the IS industry.

"The [engineering title] laws have nothing to do with public safety or any of that garbage. It's strictly a matter of power," Beizer said. "We're not going to reason with these [engineering] guys because they're not going to give up their power base. It's a matter of letting your legislature know."

Motorola offers Mac clone, boosts market confidence

By Lisa Picarille

Motorola, Inc. is known for pagers and telephones, not PCs. But some users said the $27 billion company's foray into Macintosh-compatible systems is a validation of the slumping Macintosh market.

Motorola's computer division last week emphasized its commitment to the PowerPC chip by unveiling its StarMax line of Mac OS-compatible systems and a family of Windows NT-based servers.

Motorola Computer Group officials stopped short of claiming that the StarMax line will expand the struggling U.S. Macintosh market. Rather, they said they hope to shore up the confidence of Macintosh users who may be considering defecting to the Intel Corp. platform.

Weighing the options

One user considering such a defection last week decided to stick with the Macintosh. The decision wasn't based solely on Motorola's move into the Macintosh market, but that was a key point, according to Christopher Lane, director of administration and management for the city of Philadelphia's law department.

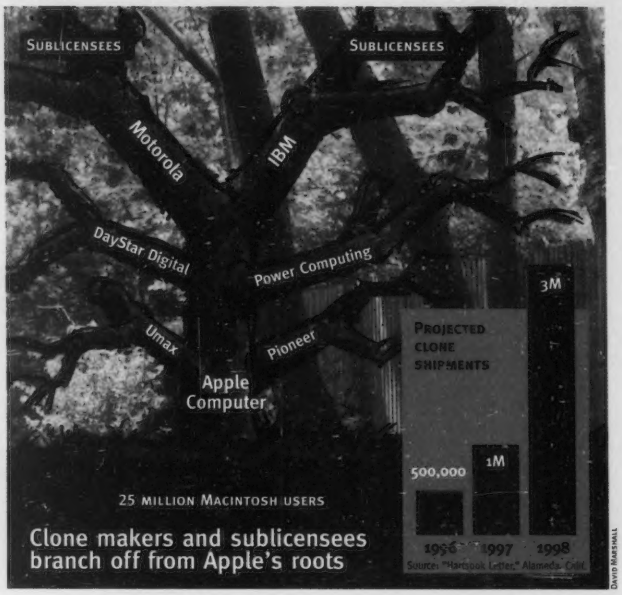
The department has 330 Apple Computer, Inc.-branded Macintoshes and is considering purchasing Macintosh clones. "If companies like Power Computing and Motorola see value in the Mac market, that makes us believe that the Mac is here to stay," Lane said.

But another IS director at a Macintosh shop, who asked not to be identified, disagreed. "The decision to switch platforms is based on more than just what big-name vendors have hardware," he said. "There are issues like how much software is available, what environment fits best with the rest of the company, what are the advantages of a single platform and whether investing more money in a clearly declining platform is a smart idea."

Many Macintosh users said they have gotten over their fears of buying Macintosh clones, but senior executives in their companies still worry about the Macintosh's viability. "We are technically comfortable with the decision to stick with the Mac. But that doesn't mean that high-level executives will be. That is where it will be a bit of a sell for us," Lane said.

Motorola hopes its five-year warranty package that covers repair and return of systems — considered to be the most extensive in the computer industry — will be an enticement to corporate users. Its StarMax line, which includes the PowerPC 603E-based StarMax 3000 entry-level family and the PowerPC 604E-based StarMax 4000 high-end line, is comparable in performance to Apple's 7600 and 8500. But products in the StarMax line cost about $900 less than comparable Apple machines. Prices in the StarMax line range from $1,595 to $2,395 for the 3000 family and $2,395 to $3,595 for the 4000 line.

"The Motorola name is recognizable and carries more weight than other Mac clone makers," said Pieter Hartsook, editor of "The Hartsook Letter," an industry newsletter in Alameda, Calif.



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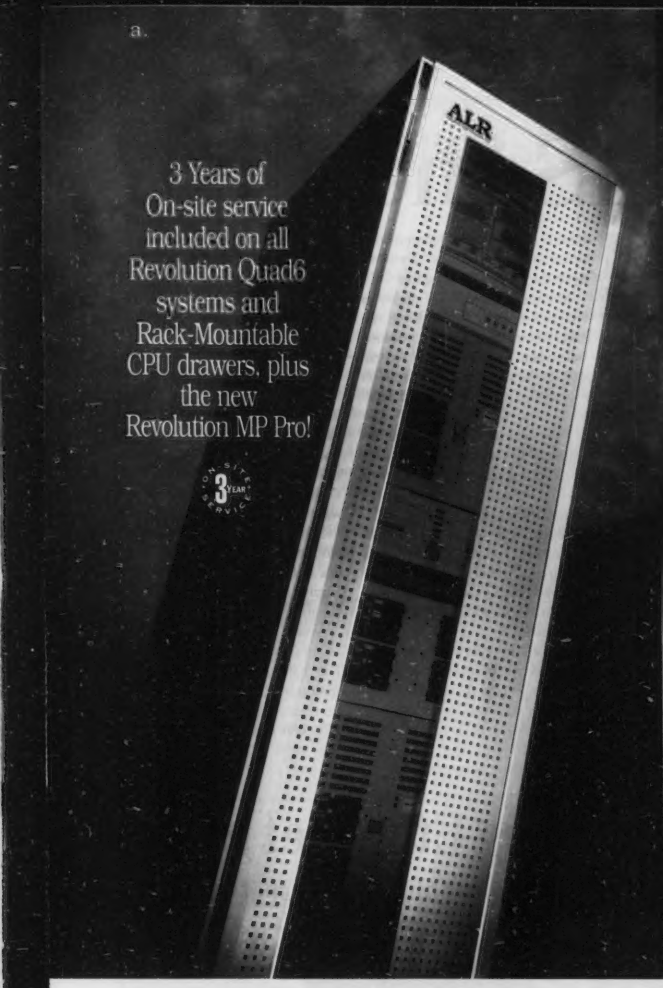

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Solstice back on IS shortlist

'net-oriented package aids management

By Patrick Dryden
ATLANTA

Many network management users and analysts have written off Sun Microsystems, Inc. in the three years since the former market leader began developing an enterprise-level platform.

Network management

But last week Sun delivered an Internet-oriented package designed to manage the largest organizations. Ironically, Sun launched Solstice Enterprise Manager at the historic Fox Theatre, where *Gone with the Wind* premiered.

"It's time to put Solstice back on the shortlist of management platforms to evaluate," said Bob Sakakeeny, director of field research at Aberdeen Group, Inc. in Boston. "Sun's navel-gazing paid off," allowing the company time to apply its diverse Internet expertise to the management of intranets, he said.

"We've never been gone," said Janpieter Scheerder, president of the SunSoft division in Mountain View, Calif. Many sites continued to run SunNet Manager, the tool kit included with Sun systems that handles domains and LANs, he said.

But users didn't consider Sun an enterprise player as other vendors took the lead with distributed technology that could scale to meet their needs.

Now, those loyal users who stuck with SunNet Manager won't have their backs to the wall, Scheerder said. They can build a management hierarchy or monitor tens of thousands of nodes centrally, whatever the need of their support structure. And managers can check their networks anywhere via a World Wide Web browser and Java applets.

SETH MITCHAMSON

Ellijay Telephone's Stacy Pettit: *'We have to support phone and now Internet users, but management can't be complicated'*

"This architecture let us distribute management applications closer to our systems and our users and build our own Web interface," said beta tester Mike Skeith, software development vice president at Hughes Network Systems, Inc. in Washington.

Remote management ability is vital to the leading provider of satellite communications because "site visits are tough and expensive to base stations located on mountains in Mongolia and Alaska," Skeith said.

The platform's distributed architecture, scalability and simplicity attracted Stacy Pettit, network operations coordinator at Ellijay Telephone Co. in Ellijay, Ga.

"We're just getting into this scope of network management but already know we must be able to cover more users and services without too much complexity," Pettit said.

But Sun may have a hard time recapturing the interest of users who have moved on to distributed platforms such as OpenView Network Node Manager from Hewlett-Packard Co. and Spectrum from Cabletron Systems, Inc.

For example, network managers at Chevron Information Technology Co. in San Ramon, Calif., said they gave up on SunNet Manager to expand their reliance on OpenView.

And even Sun users aren't shoe-ins for the new platform.

Atlanta-based Turner Broadcasting System, Inc. relies on servers from Sun for its Web presence, but the vendor's management efforts "seem dead," said Charles Hebert, manager of software services support.

Solstice Enterprise Manager shipped a year ago to key developers and users, primarily in telecommunications, in a form that required much integration effort.

Now it is available to the public as Version 2.0, starting at $22,500. The base package supports five clients and one server.

LAN and enterprise management suites are converging. See page 65.

Novell's Internet message gets wary reception from showgoers

By Laura DiDio

Amid bright lights and foot-stomping gyrations (literally), Novell, Inc. unveiled its IntranetWare offering at Networld/Interop '96 last week in Atlanta.

What it's got

IntranetWare includes the following: NetWare 4.11, NetWare Web Server 2.5, Netscape Navigator, TCP/IP with support for the Dynamic Host Control Protocol, Internet Access Server and Web-site authoring tools.

The high-energy acrobatics of The Rhythmics, a group of hip-hop performers who used sticks and pails to pound out Novell's Internet message, drew raves from the standing-room-only crowd. But many users and analysts on the show floor said they want concrete evidence there is more to IntranetWare than showmanship.

"Novell has to prove to us they can deliver. And that means being the best of breed in terms of ease of use, close integration with NetWare file, print and directory services, and native IP support," said Keith Thibodeau, LAN manager at United Companies Lending Corp. in Baton Rouge, La.

Another try

IntranetWare, a bundle of the NetWare operating system and a host of products that turn it into a World Wide Web server, is Novell's latest attempt to recast itself as a full-service intranet/Internet provider.

Thibodeau and Larry Davis, vice president of manager operations and technical support at United Cos., said although their firm has already made a "strong move" toward Windows NT Server, Novell still has a shot — albeit a long shot — in their shop. "We didn't hear [about] IntranetWare from Novell until a couple of months ago. Now they're telling us it's the basis for all future Novell operating systems. We need to be sure they're for real," Thibodeau and Davis said.

Steve Merriman, a data communications analyst at Union Camp Corp. in Savannah, Ga., a paper firm with 10,000 users, said Union Camp mainly uses NT Server but would be willing to consider IntranetWare if "Novell can prove it's a best-of-breed offering."

To be sure, there was a visible contingent of die-hard Novell users. Mark Cooper, technology consultant at the South Carolina State Department of Education in Greenville, said the department plans to link the state's 1,100 elementary and high schools to the Internet using Novell's IntranetWare.

"We like Novell's direction. We've been brought up with NetWare. It works great, so why change?" Cooper said.

But an assistant vice president at a large Midwestern bank, who requested anonymity, said there is no debate for his company: NT Server will be its Intranet server. "We'll keep NetWare for file and print because we have 30,000 users on it. But our feeling is that Microsoft and Netscape are the future," he said.

Switching Ethernet gears

Many users opt for 10M bit/sec. Ethernet over ATM

By Bob Wallace

Vendors on the show floor were hyping the leap to high-speed ATM and Gigabit Ethernet LAN switching, but users at Networld/Interop '96 were focused on the smaller step from Ethernet to switched Ethernet.

Ethernet users share bandwidth, but switching provides 10M bit/sec. of dedicated bandwidth from each desktop.

BILL LIEBHART

State Street Bank's Thomas Stenson: *'Our networks have to be up all the time'*

"We move billions of dollars of cash across our networks every day and are running into congestion and performance problems with 100 to 150 end users on an average Ethernet segment," said Thomas Stenson, vice president of network architecture and planning at State Street Bank and Trust Co. in Boston. "If part of our network went down, we'd be unable to price mutual funds for financial institutions and be liable for millions of dollars as a result. We're moving to switching to make sure that never happens."

Price is right

Asynchronous Transfer Mode (ATM) offers 155M bit/sec. and above and Gigabit Ethernet runs at 1G bit/sec., but Stenson and others are investing in the more modest and inexpensive 10M bit/sec. pipes. For example, ATM costs about $500 per desktop; switched Ethernet costs only $200.

Stenson is eyeing the newer technologies for down the road. "We'll look at ATM and Gigabit Ethernet as potential options to replace our FDDI backbone network in a year or so," he said.

Wake Forest University in Winston-Salem, N.C., is using Ethernet switching to lay the groundwork for its Access 2000 program. In that program, the college issues each student a new PC as part of tuition and puts an Ethernet connection in every dorm room.

Ronald Rimmer, network manager for the information systems unit at Wake Forest, said, "We already use 40 Ethernet-to-FDDI switches to carry student and faculty traffic. ATM to the desktop will be potentially attractive in the future but will require a different skill set for our staff," he added.

Even firms that have been conservative in implementing new internetworking technologies are looking to switched Ethernet.

"We've had 180 users on single shared Ethernet segments at our world headquarters and have experienced major congestion and response time problems," said Jim Nailor, director of telecommunications services at Avon Products, Inc. in New York.

Rumors fuel angst over online privacy

CONTINUED FROM PAGE 1

The incidents also underscore how online discussion — factual or not — can quickly escalate into public rage. A company that launches an activity likely to be controversial must monitor discussion areas such as Usenet newsgroups, experts said.

"Everyone in the world has a megaphone [via the Internet]. People need to think about what they say before they say it," said Lee Nienaber, assistant manager of information services at The Calvert Group, an investment firm in Bethesda, Md.

Lexis-Nexis last week was assaulted by reports on the 'net that it was electronically publishing individuals' Social Security numbers and their mothers' maiden names on its new P-Trak service, a proprietary online service.

Privacy-busters

Where to find personal information, and what you'll find when you get there

Lexis-Nexis P-Trak
(proprietary service)
Name, address, previous address, phone number, previous names (such as a woman's maiden name)

Yahoo People Search
(www.yahoo.com/search/people/)
Enter name, and it will supply address and phone number. Enter phone number, and it will supply address and name that goes with it.

Four11 The Internet White Pages
(four11.com)
Name, address, phone number, E-mail address

Switchboard
(switchboard.com)
Name, address, phone number

The Dayton, Ohio-based information service couldn't take telephone calls from its customers, as it fielded thousands of calls from irate individuals who sought to have their names removed from the list, said company spokeswoman Judi Schultz. Lexis-Nexis will remove names from the list at an individual's request. For more information, go to www.lexis-nexis.com.

Widely available info

The list actually sells people's names, current and previous addresses, phone numbers and former names (such as a woman's maiden name). The information is easily available elsewhere online (see chart) and through traditional channels, Schultz said.

But there was a kernel of truth to the rumors. In fact, the new P-Trak service distributed Social Security numbers for individuals for 11 days in June, when an earlier outcry forced Lexis-Nexis to discontinue the service.

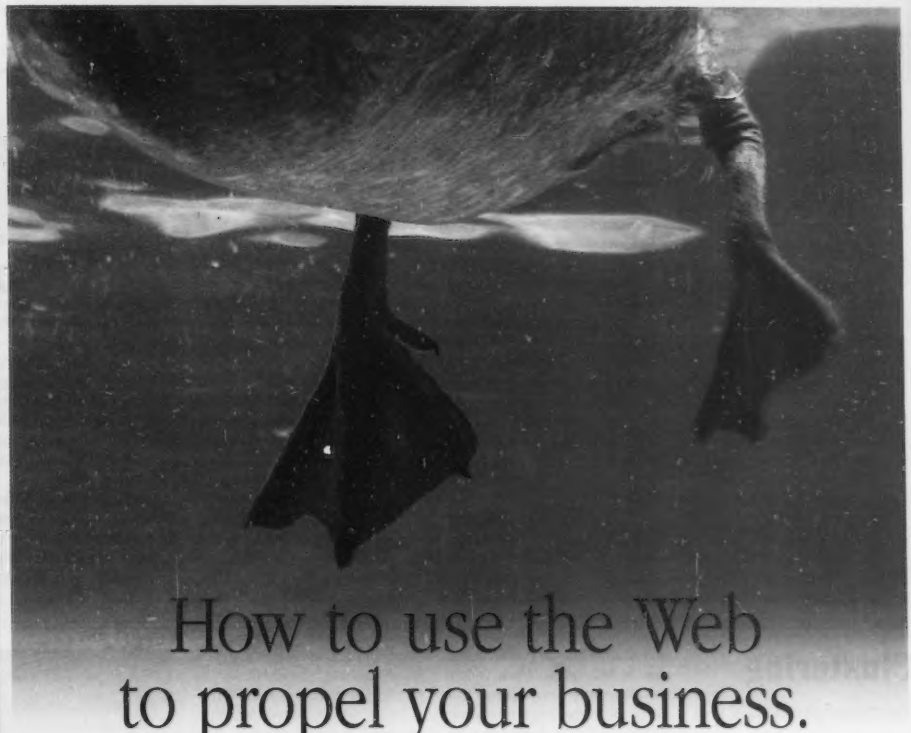
If Lexis-Nexis hadn't sold those Social Security numbers, it wouldn't have had a problem, said David Sobel, legal counsel for the Electronic Privacy Information Center, a Washington-based lobby group. "Their hands are not totally clean."

The incident demonstrates the need for legislation to regulate the exchange of private information in commercial databases, said Beth Givens, a project director at the Privacy Rights Clearinghouse at the University of San Diego. Individuals currently have no way to control the information being compiled about them. In many cases, they don't even have a way to find out that information is being compiled at all.

"You can exist in a Kafka-esque environment, where decisions are being made about you, and you haven't a clue about the source of these decisions," Givens said.

But Mike Godwin, attorney for the Electronic Frontier Foundation (EFF), said legislation isn't the answer. The EFF, a group that lobbies for the extension of civil rights in online interaction, is developing E-Trust, a set of guidelines for how companies can protect individuals' information online.

Firms that abide by the guidelines will be able to display an E-Trust seal. Eventually, Internet browsers may be built that can screen out noncompliant sites in the same way that browsers can now be configured to shield users from viewing pornography.



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AT&T

Prudential breaks off piece of the rock

ISSC to run mainframe data centers

By Michael Goldberg

Prudential Insurance Company of America last week hired Integrated Systems Solutions Corp. (ISSC) to run its mainframe data centers in a five-year deal worth $340 million.

The outsourcing pact means that ISSC, an IBM subsidiary, will manage the insurance company's legacy applications in its individual insurance and money management groups.

The move will allow Prudential to focus on developing new applications on "more modern and flexible environments," said William Friel, a senior vice president and chief information officer at Prudential in Newark, N.J.

Outsourcing

The CIO said Prudential expects productivity gains from the outsourcing move and from developing in-house applications on new System/390 mainframes and on Unix and Windows NT servers.

As part of the agreement, ISSC will offer jobs to the approximately 900 Prudential workers affected at data centers in eight cities.

The jobs will have "substantially the same compensation and will be located in the same geographic locations as the Prudential sites," according to a statement issued by Prudential and IBM.

Cost savings

Typically in outsourcing deals, companies such as Prudential look to save money by cutting its information systems payroll while leveraging the experience of the outsourcing vendor.

The outsourcer, in turn, can achieve economies of scale by spreading technology and staffing costs over many data centers, said Alex Whitehead, an outsourcing analyst at G2 Research, Inc. in Mountain View, Calif.

"It's a significant deal [for ISSC] because it is Prudential," a high-profile client, Whitehead said. "It's a marquee account."

Chase rethinks deal

CONTINUED FROM PAGE 1

there was any dissatisfaction with his company's services.

Although terms of the network outsourcing deal were never publicly disclosed, insiders estimated its cost at $90 million to $100 million per year for seven to 10 years. The contract was expected to help Chase slash its global networking costs by $10 million a year, a goal that bank sources said it has been accomplished so far.

Chase's desire to renegotiate its AT&T outsourcing deal stems in large part from its merger last year with Chemical Banking Corp. Sources say it has become impossible to coordinate network planning and integration for the banks' information systems consolidation with two separate owners — in this case, those who ran Chemical's global network and AT&T.

The situation reflects what many outsourcing customers are learning the hard way: They often have to redefine their contracts once they have assessed a vendor's performance and decided on more clearly defined goals. For example, sources at Xerox Corp. in Rochester, N.Y., said the document company recently restructured its 10-year, $3.2 billion deal with Electronic Data Systems Corp. (EDS) to ensure the Plano, Texas, vendor meets specific productivity goals.

One source close to Chase and AT&T said there is a lot of anxiety between both parties, particularly for the 140 or so former Chase employees whose future with AT&T is on the line. Those AT&T staffers working on Chase networks "are running scared," the source said.

Rumors have circulated for weeks in the banking industry that AT&T might get "kicked out" by Chase.

An AT&T executive responsible for the relationship with Chase acknowledged that rumors have circulated for weeks in the banking industry that AT&T might get "kicked out" by Chase. But Rick Roscitt, managing director of AT&T Solutions' worldwide outsourcing practice in Florham Park, N.J., said the rumors are untrue.

Roscitt also denied Chase was displeased with AT&T services. He confirmed that renegotiation is being considered, including the possibility of AT&T reselling to Chase all the routers, hubs and other networking equipment transferred to the vendor under the original contract.

"You can't have two hands on the wheel steering the ship in different directions," Roscitt said, referring to management of the Chase and Chemical networks.

Bank pleased

Chief Information Officer Denis O'Leary and other Chase executives declined to be interviewed for this story. A spokeswoman for Chase would say only that the New York-based bank has been pleased with AT&T's assistance during the bank's merger with Chemical.

Industry analysts said they weren't familiar with Chase's plans to rework the deal, but one banking expert said he wasn't surprised by the complaints about AT&T.

"AT&T's whole culture stands out in sharp contrast to whom I call 'The Marines,'" said Art Gillis, president of Computer Based Solutions, a banking consultancy in Dallas. "The Marines" Gillis referred to include outsourcing vendors such as EDS and Computer Sciences Corp., which "act like SWAT teams to get customer jobs done. They don't go through schools of bureaucracy" as AT&T managers do, Gillis said.

Clustering

CONTINUED FROM PAGE 1

vendor — which means incompatibility and systems management woes for users.

In the past few months, several hardware vendors have announced high-availability Windows NT clustering products. These vendors include Digital Equipment Corp., NCR Corp., Compaq Computer Corp., Data General Corp. and Tandem Corp.

But some of the vendors are downplaying the possibility of lock-in with their current Windows NT clustering products. NCR, for instance, which recently extended Windows NT fail-over support to its Lifekeeper management product, denied that its high-availability NT clustering tied customers to its hardware.

But a Microsoft Corp. manager pointed out that each of the clustering products are available only on that vendor's server platforms. "Clustering NT servers today is no better than in the world of Unix and mainframe and no worse," said Mark Wood, a product manager at Microsoft. "Each vendor has taken their own approach to it, and there are currently close to 12 different [NT] clustering products worldwide."

One reason for that diversity is that there are no NT clustering standards to which vendors can develop, analysts noted.

"If you need to do [NT] clustering right now, don't pay a lot. And most importantly, hedge it contractually" against vendor lock-in situations.

— Morgan Gerhart, Meta Group

Some users are worried by the prospect of returning to vendor lock-ins.

"From a systems integration point of view, you simply cannot afford to be locked in," said Sean Gilbert, IS manager at Cardservice International, Inc. in Agourra Hills, Calif. "There are acquisitions after acquisitions taking place in this industry, and you need to have the flexibility to merge systems."

"We would like to see the industry move to a more open way of doing clustering," said Danny West, manager of workgroup support at Transquest, Inc., a subsidiary of Delta Air Lines in Atlanta. "The problem with anything new is that vendors try to build their own standards."

Clustering standards

The only standards effort on the horizon is led by Microsoft's Wolfpack, an eight-vendor group trying to forge standards for Windows NT clustering. The effort is supposed to yield base-level clustering capabilities that will be built in to NT. A common set of application programming interfaces also is supposed to give hardware vendors and independent software vendors a standard on which to build their clustering products. The first products based on Wolfpack are expected by the middle of next year.

Clustering is a reliability- and performance-boosting technique used for years with Unix systems, Digital VAX servers and other midrange computers. Multiple servers are linked to appear as a single system to users and to applications. Resources can then be added incrementally to the system to either scale performance or provide additional security.

The potential for incompatible NT clusters is likely to increase as hardware firms add complex layers of differentiation to their NT clustering products, analysts said.

The consequences of vendor lock-in could be much greater for users when vendors start getting into performance clustering. Here, the applications and the databases need to be tweaked, and any move or integration among different vendor platforms will involve substantial cost and effort, analysts warned.

"If you need to do [NT] clustering right now, don't pay a lot. And most importantly, hedge it contractually" against vendor lock-in situations, warned Morgan Gerhart, an analyst at Meta Group, Inc. in Stamford, Conn.

Clustering on NT

Potential problems	Potential solutions
Underlying software and middleware is vendor-specific: Cluster products from one vendor don't work on other hardware platforms.	Vendors will license their cluster products to other vendors. Existing cluster products will be fully integrated with Wolfpack to increase base-level portability.
Server interconnect technology and software are proprietary.	One or two vendor products could emerge as standards.

NT is also pushing Unix vendors at the mainframe market. See page 45.

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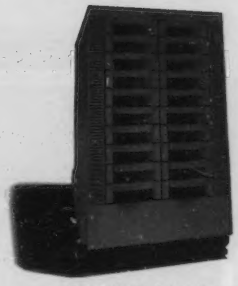

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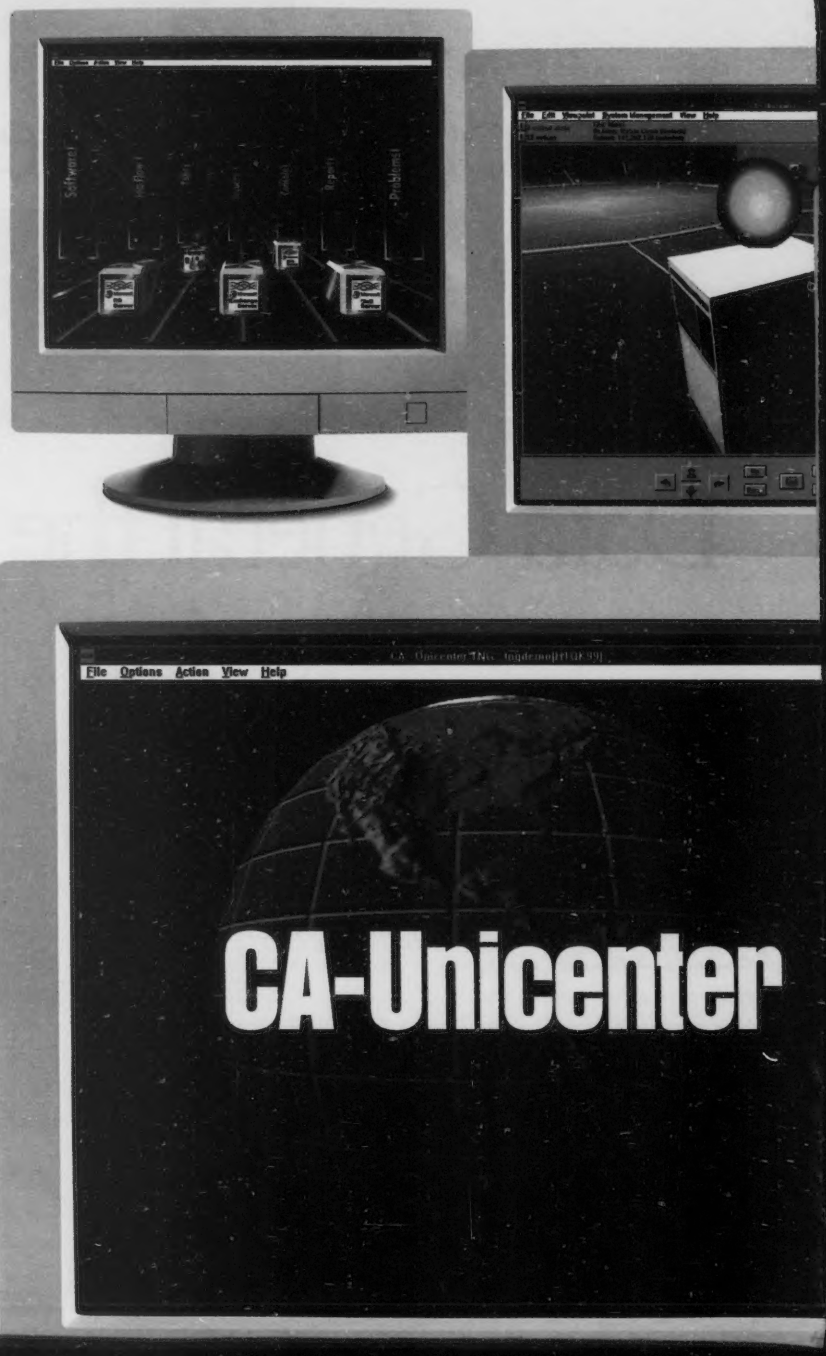

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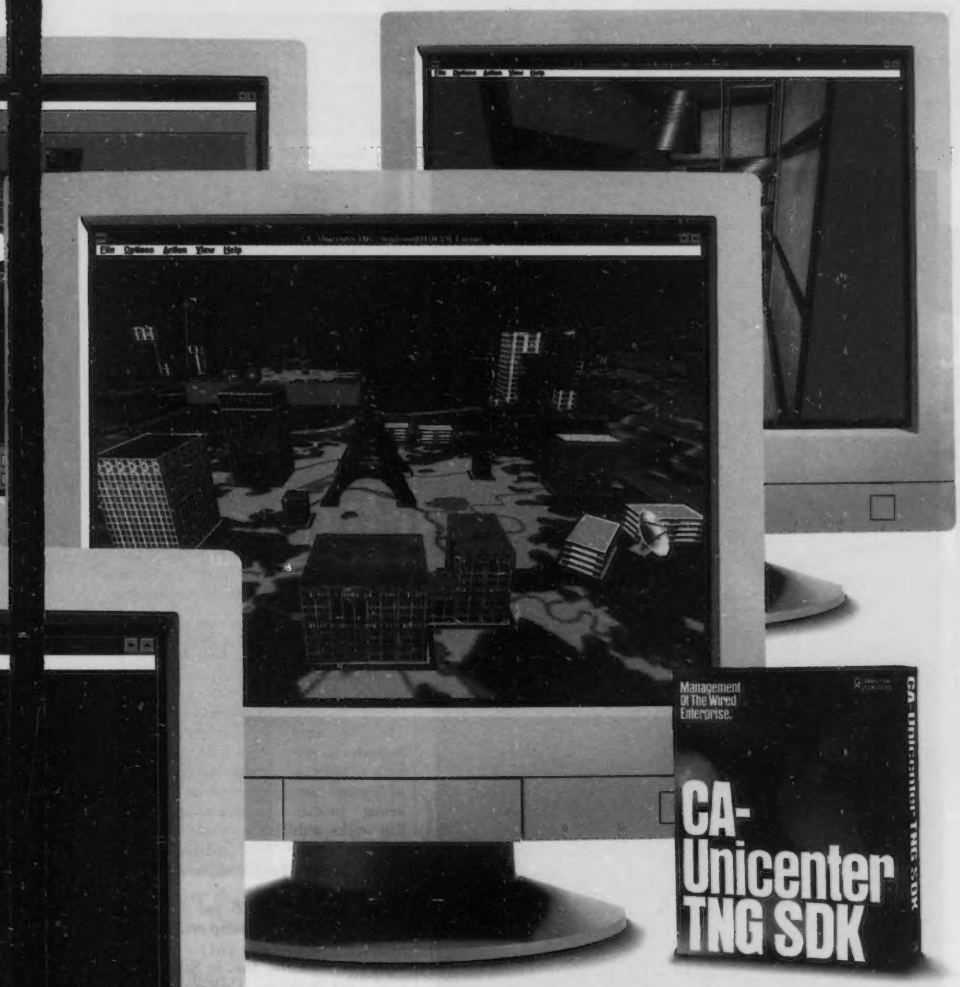

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Marketers sold on Web sales software

By Mindy Blodgett
BOSTON

The traveling salesperson of the future may spend more time scouring the Internet for "hot prospects" than pounding the pavement, according to attendees at the recent Field and Sales Force Automation conference here.

Traditionally, lead generation has come from sources such as trade shows, mailing lists and contests. But marketers hope that World Wide Web sites full of questionnaires and visitor-tracking software will be less expensive and less laborious.

"The biggest challenge facing a sales representative is to find and qualify potential customers. It's expensive and time-consuming. Using the Web for these purposes is a much more cost-effective and efficient method," said sales force automation consultant Barton Goldenberg, president of Information Systems Marketing, Inc. in Washington.

One user at a large oil company, who requested anonymity, said his company is already testing uses of the Internet and sales force automation software for tracking customer orders and deliveries via the Web.

"We're intrigued because building a private network that works with the sales force automation system could be quite expensive," he said. "We're testing it now and don't know how well it will work yet. But we think the Internet has a lot of potential for sales and marketing."

Making the sale

Features of Group 1 Software's TrueLead Web-based sales force automation software:

- A Java applet to ensure accurate address data from prospective customers is captured at the browser.
- Interactive forms allow online questionnaires to change dynamically without having to change them on the server.
- The form's appearance and other features can be changed by anyone capable of writing HTML.

Consequently, vendors are adding Internet capabilities to their sales automation software packages, such as the following:

- Later this year, **Group 1 Software, Inc.** in Lanham, Md., will offer TrueLead, a Java applet that works with Group 1's WorldTrak sales force automation software to capture leads via a Web site. Data is captured by the Java applet. Pricing isn't yet set.
- **Data Systems Support** in New York is offering an Internet marketing module that works with its Sirs sales force automation software. Sirs costs between $795 and $2,250 per user; the Internet marketing module costs $7,500.
- **Aurum Software, Inc.** in Santa Clara, Calif., and **Netscape Communications Corp.** in Mountain View, Calif., are creating a more efficient relational database that can track customers and follow leads generated by hits to the corporate Web site.
- **Brock International, Inc.** in Atlanta is adding a Web module to its Take Control Suite of sales force automation software. The software allows a company to integrate its Web page with an existing sales and marketing database. The suite costs about $50,000 for 10 users.

Big leap

The sales force automation industry will grow this year by about 20% into a $1 billion market in 1997, estimated Barton Goldenberg, a sales force automation market consultant.

The travails of telecommuting are on sales professionals' minds. See page 66.

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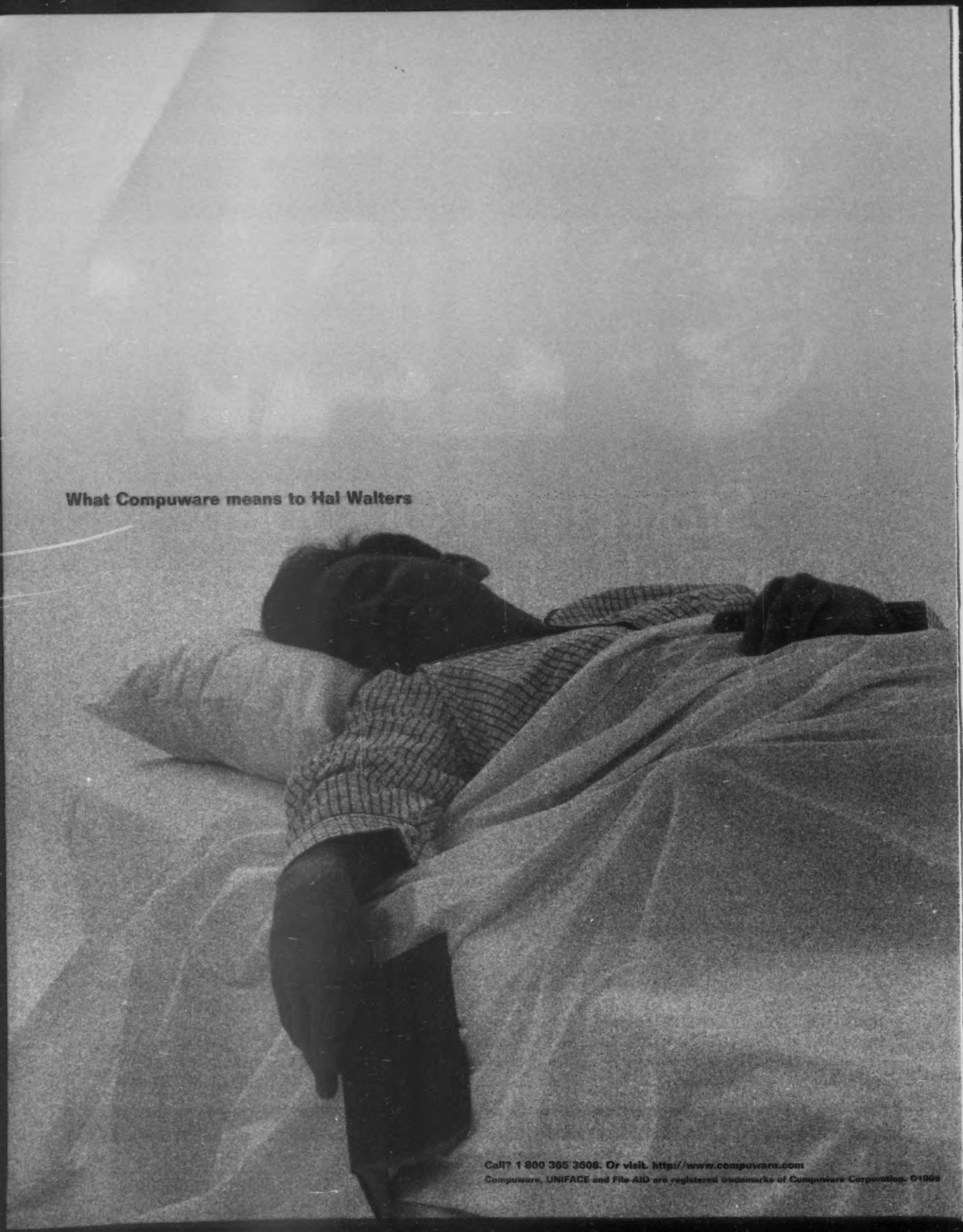
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Candle bundles message middleware support

By Tim Ouellette

Like most politicians in this election year, Candle Corp. is moving toward the middle.

The Santa Monica, Calif., systems management software company this week will announce plans for a full range of products and services that target the burgeoning message-oriented middleware market.

Message-oriented middleware lets applications send a secure data message to an application running in a different computing environment. For example, companies can connect client/server systems to legacy applications without extensive, and expensive, communications programming.

But middleware still takes time to install and properly maintain, and it requires outside expertise and management tools to make it work. A complete offering from one vendor could save users extra time in getting middleware up and running and let them focus on areas that would benefit most from its use.

"There is not a lot of MQSeries expertise out there right now," said Steve Craggs, Candle's new vice president of networked applications and the former senior manager of IBM's MQSeries group. "Sometimes just giving users a product without additional services and management just adds to their problems."

Candle's Steve Craggs: *Giving users a product without added services 'adds to their problems'*

Systems management vendors want to get more into managing middleware (see story, page 53), but analysts say Candle's complete package is unique.

"I don't know anyone else doing this," said John Mann, an analyst at The Yankee Group in Boston. "With everyone having just little pieces of the [message-oriented middleware] market right now, vendors have to have broader offerings than just the software product."

Candle's first packages will use IBM's high-profile MQSeries middleware product. Lotus Connect links legacy applications to Lotus Development Corp.'s Notes; Connect Two links two applications together. SAP Connect, IMS Connect and Internet Connect are expected later this year. Prices range from $50,000 to $100,000.

Lotus Connect includes the following:

- Two to 10 days of services (made possible by Candle's purchase this week of Amsys North America, a Mendon, Mass., MQSeries service company).
- Candle's Command Center systems management suite.
- Intelliwatch Notes management software from CleverSoft, Inc. in Scarborough, Maine, which was bought by Candle this summer.

The initial focus on MQSeries is, in part, because Candle has been a North American reseller of the middleware — just this week inking a global agreement with IBM. But along with Craggs, Candle has recently lured several high-level team members from IBM's MQSeries group.

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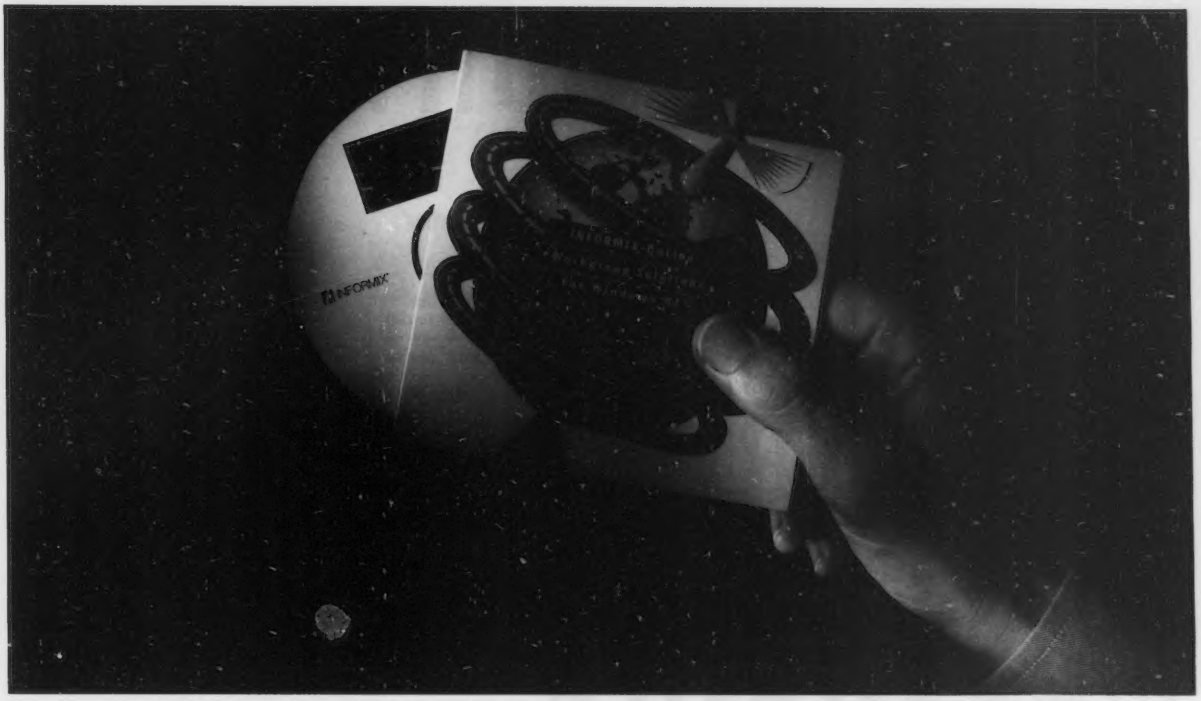

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Pending ADSL services will speed 'net access

By Kim Girard

Business and residential users who demand multimegabit access to the Internet should see carriers unveil pumped-up ADSL services next year.

Enabling that access will be vendors such as start-up Sourcecom Corp. in Westlake, Calif., the first player to enter the market with a Digital Subscriber Line Access Multiplexer (DSLAM), a device that collects customers' Asymmetric Digital Subscriber Line (ADSL) traffic and moves it onto carrier trunks. ADSL is a technology that offers high-speed Internet and remote access over plain copper telephone lines.

Sourcecom's BANC 6000 DSLAM Plus, which was unveiled last week at Networld/Interop '96, consolidates multiple modem links and routing methods into a single box. This conserves space at the carrier's central office. The BANC 6000 can also be used within Asynchronous Transfer Mode (ATM), Synchronous Optical Network and frame-relay networks.

The BANC 6000 "is significant for service providers that want to get a jump on provisioning the XDSL services," said Kieran Taylor, broadband analyst at TeleChoice, Inc., a consultancy in Verona, N.J.

But just when carriers will make that jump is up in the air. Several Baby Bells said they are looking at the technology and conducting trials, but they haven't made large-scale commitments to deploy the service.

Jeff Smith, engineering manager at Perot Systems Corp. in Dallas, said Perot has discussed trials with GTE Corp. Smith said he wants to replace some Integrated Services Digital Network lines with ADSL for remote users.

"They weren't ready to allow us to even trial it," he said.

At a low cost to carriers of about $275 per port, Sourcecom's BANC 6000 raises the stakes in the ADSL access product market, said David Passmore, president of Decisys, Inc., a networking consultancy in Sterling, Va.

The BANC 6000 can be used to switch and route either frame- or cell-based traffic at high speeds, Sourcecom said. The product's wide-area ports support up to 12M bit/sec. of bandwidth. That means they can handle ADSL, a member of the XDSL family that promises transmission speeds of up to 6.144M bit/sec. going to a remote site and nearly 640K bit/sec. returning.

Carriers that use the BANC 6000 can connect to traditional ATM switches and IP switches without investing in expensive enterprise routers. The BANC 6000 eliminates the need for an Ethernet switch and the router.

ADSL standards wars have slowed deployment of the technology. Analysts said many carriers will be unwilling to commit to offering the service until there is a compromise standard.

The BANC 6000 base unit includes 32 wide-area network ports and will be available next month for $19,950. The dual-port frame-relay interface card will also be available next month for $3,450. An ATM OC3 single-port interface card will be available in December for $5,950.

Guide to DSL alphabet soup

Technology	What it stands for	Speed	Applications supported
DSL	Digital Subscriber Line	160K bit/sec.	ISDN, voice and data services
HDSL	High Data Rate Digital Subscriber Line	1.54M to 2.048M bit/sec.	T1 services, WAN/LAN access and server access
SDSL	Single Line Digital Subscriber Line	1.04M to 2.048M bit/sec.	Same as HDSL
ADSL	Asymmetric Digital Subscriber Line	1.5M to 9M bit/sec.; 16M to 640K bit/sec.	Internet access, video on demand, LAN access, interactive multimedia
VDSL	Very High Data Rate Digital Subscriber Line	13M to 52M bit/sec.; 1.5M to 2.3M bit/sec.	Similar to HDSL but faster

Net managers take control of enterprise systems with NT

By Bob Francis

Network managers have their eye on the Window.

They are beginning to view Windows NT servers as the connecting piece between their PC-based platforms and enterprise systems. Those managers see it as an opportunity to take control of the PC platform with better links to enterprise platforms such as Unix or mainframes.

Network management

Windows NT provides those links through better management features such as Microsoft Corp.'s System Management Server, which will eventually become part of the operating system, according to Microsoft officials.

"We use Windows NT for our help desk, and it runs like a redundant system for our NetWare environment. It gives us some better control [than a Novell, Inc. NetWare environment] and is a better platform for systems management," said Bill Woloch, manager of the information systems center at Georgetown University in Washington. He said Windows NT offers a better database environment and stronger links to other systems than NetWare does.

System management vendors are listening. Even Novell's ManageWise now sports Windows NT capabilities. And start-ups are also getting in on the act. The year-old NetiQ Corp. in Santa Clara, Calif., composed of former officials of mainframe and Unix management companies, was founded with the express purpose of delivering system and application management products on Windows NT.

At last week's Networld/Interop '96, McAfee Associates, Inc. joined the crowd, offering McAfee Enterprise, or Me, as a Windows NT-focused method for connecting NetWare and Windows NT-based PC servers and desktops to the enterprise. Through Windows NT, Me connects with enterprise network management products from Hewlett-Packard Co., BMC Software, Inc., Network General Corp. and IBM's Tivoli group.

Woloch, who uses many McAfee products, said he expects to build on those products to better manage the desktop. "With better integration [between various products], we can avoid a lot of the duplication we see in fixing problems using separate network and system management platforms," he said.

Not going anywhere

But not all IS managers will be moving to a Windows NT-centric vision of system management. Simon Taufique, network administrator at New York University, is installing some Windows NT pilot projects, but NetWare remains a major function of his network. "I think NetWare will be around here for some time," he said.

And according to International Data Corp. (IDC), a research group in Framingham, Mass., Taufique is sort of right and sort of wrong. IDC predicts that NetWare's share of the server operating system market will drop only 7% from 1995 to 2000, from 37% to 30%. But Windows NT's share of the server operating system market will increase from 16% to 33% in the same time frame.

According to R. Paul Mason, an analyst at IDC, the move to Windows NT on servers is inevitable. "It's happening already to a large extent. And for system management vendors, this is their chance to connect with the enterprise," he said.

Move to distributed systems management wasn't a big problem for this user. See page 80.

Movin' out

System management vendors are hitching their wagon to Windows NT. Here's a list of various Windows NT strategies.

Vendor	Product	Windows NT strategy
Intel	LANDesk	Latest version has added Windows NT functionality.
Novell	ManageWise	Ties in with LANDesk for Windows NT functionality.
Symantec	Expose	Expose designed for Windows NT, NetWare and Vines.
McAfee Associates	McAfee Enterprise	Uses Windows NT platform for LAN management and connects to enterprise management.
NetiQ	AppManager Suite	Management solutions focused on Windows NT platform.

Choosing the best hardware to run Windows NT® 4.0 has forced IS managers to confront their biggest fears:

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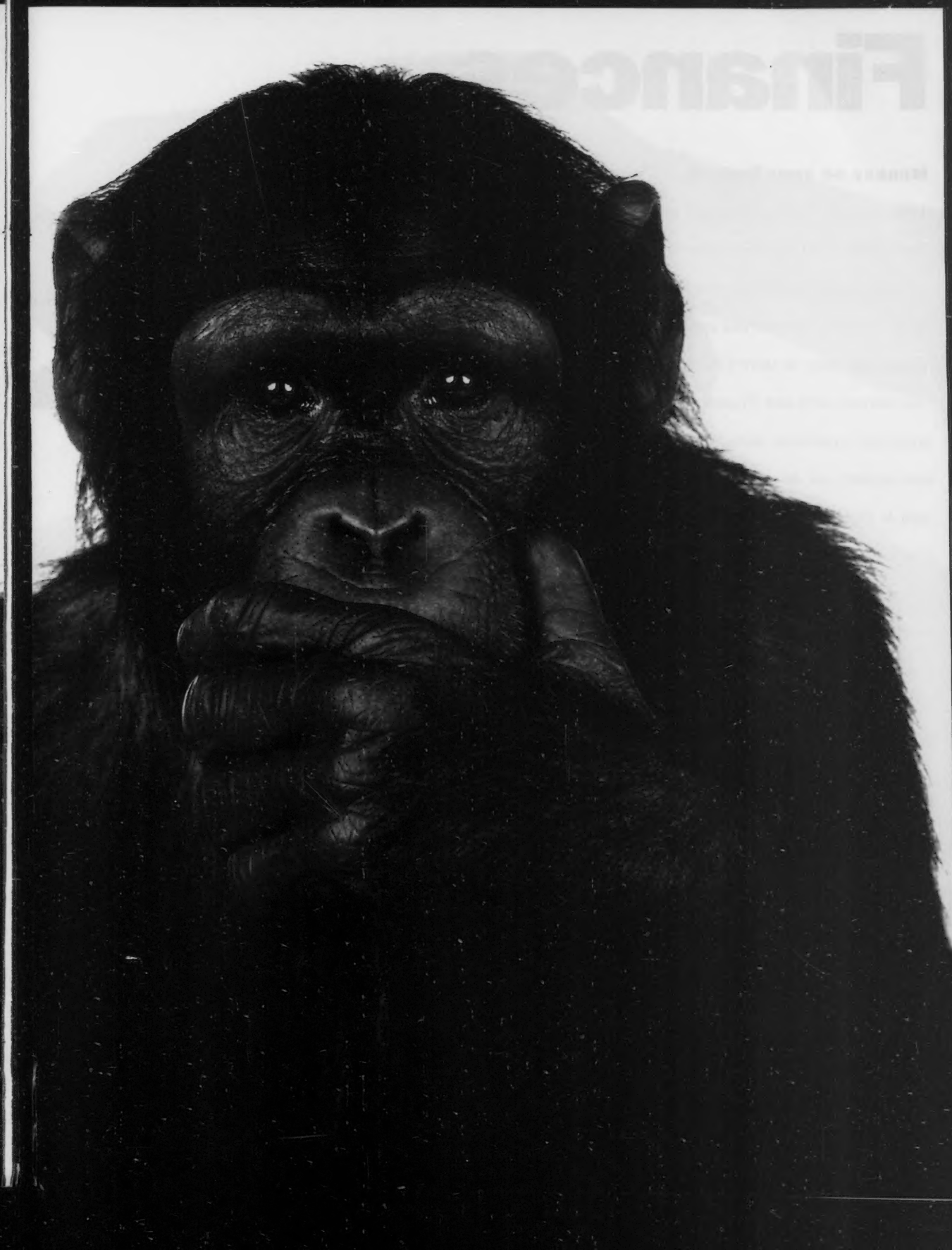

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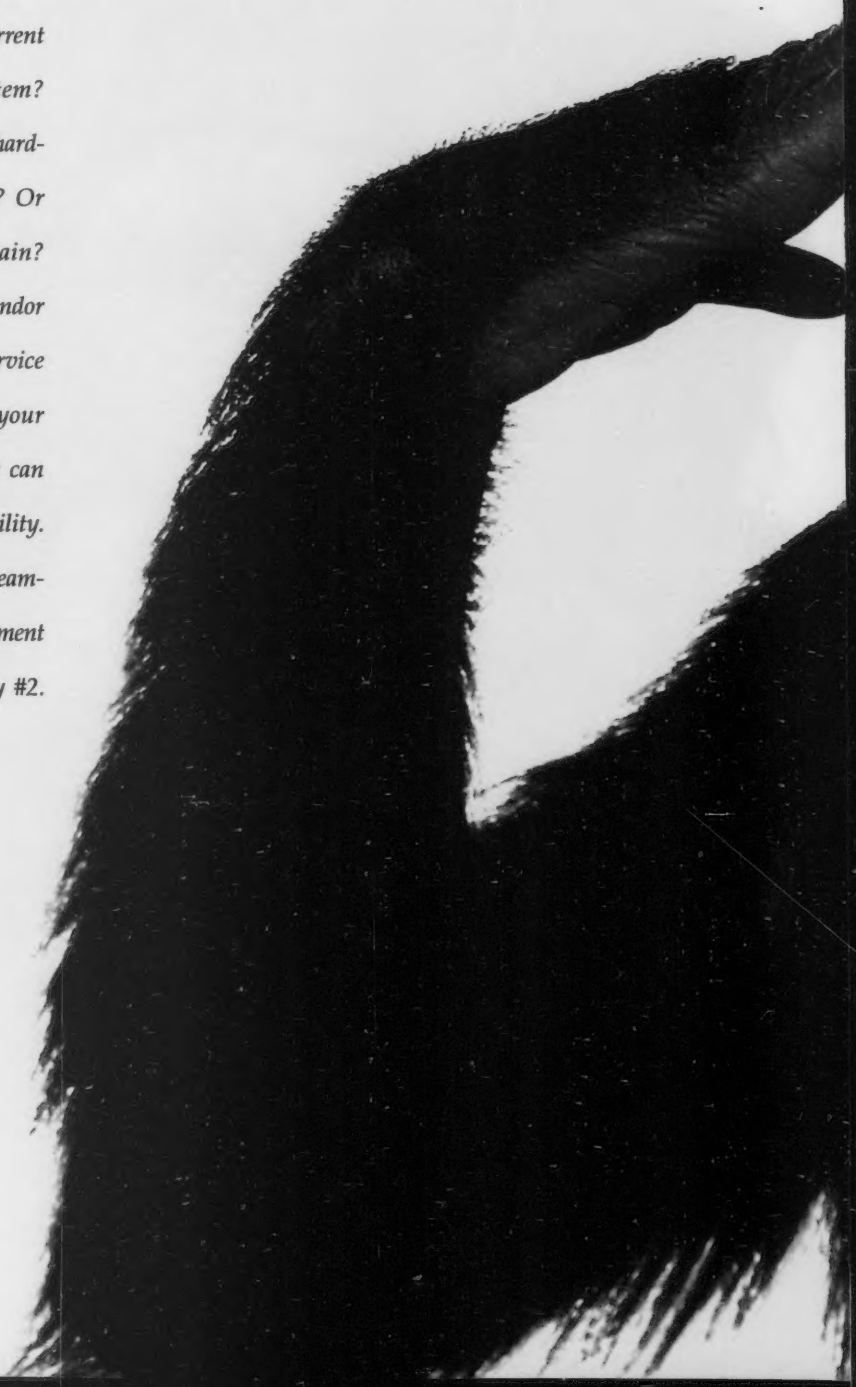

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Computer Industry

Ken Olsen, 'The Professor,' still blunt as ever

By Michael Goldberg
BOXBORO, MASS.

Ken Olsen is back in the headlines again, leading a small computer company that caters to VAX users and others who are grappling with legacy systems.

The 70-year-old founder of Digital Equipment Corp. now chairs the privately held Advanced Modular Solutions, Inc., a start-up he helped launch four years ago.

Modular's business centers on helping those who use mainframes or VAX servers to manage long-standing applications as they move to higher-performance servers.

Olsen is The Professor at the 100-employee firm, dispensing business philosophy, critiquing computer designs and tinkering in his on-site workshop. In keeping with his reputation for speaking plainly, he has some blunt observations about what's wrong with today's computer industry.

JERRY VALENTE

Ken Olsen: *'It's kind of fun to do something everyone else ridicules.'*

CW: Modular wants to help users with legacy applications. Are you doing something others aren't?
Olsen: One of the things we've lost as computer science has taken over so much of industry is the obvious goal of solving problems. It was easier in times past. You found a problem, and you found a solution. Today, the computer scientist has taken over, and you have no idea of how a business is run, and [you are] developing technology and saying this will revolutionize business without the slightest idea of what it is. The result is that business is spending more and more money buying capacity — speed, networking — without any sense of what the goal is.

CW: How did this disconnect between computer science and business needs come about?
Olsen: We still love speed and bandwidth. And a lot of the fun projects and applications are done with a lot of speed and a lot of bandwidth. But the normal business problem can be well-defined. With that problem defined, one can find an optimal solution.

CW: Should we get back to a model of more centralized computing?
Olsen: Some things should be centralized. I was very unpopular five or 10 years ago for saying mainframes will not die. Most of the computing gets pumped out by those things. The computing that people are involved with, a large part of that will be done on the desk. But the obvious weakness there is that in a business — unlike at home — people should always use the same software.

CW: Modular has a cross-platform server that works with different kinds of legacy systems. What is the future of these kinds of environments?
Olsen: The obvious strategy is to pick the best application and use the hardware and operating system in which it was made. Usually the best application is the one that's working now. The so-called legacy — I don't like the word — will last forever, as long as it's working well. Some of them have to be replaced, because they don't do the job anymore. But in general, you want to leave those that work alone. If it ain't broke, don't [fix it].

CW: Will the Internet or intranets be valuable for real business applications?
Olsen: The Internet is something that I would not have my company on ever. It's foolishness to ever get involved in it with your business computing. The intranet is something we had at Digital for 25 or 30 years, and it's a necessity. It should be done with discipline so that it does work all the time.

CW: Has technology changed for the better or for the worse in the past few years?
Olsen: The thing that is beautiful is that you can get so much done so fast. We can design a printed circuit board here, send it out and have it in a few days. The problem with this is that things are getting more and more complicated, and people just can't tolerate the complexity.

COMPUTERWORLD
You can hear Ken Olsen and read more excerpts from this interview at *Computerworld*'s Web site (www.computerworld.com).

Ken doesn't surf

You won't find Ken Olsen surfing the 'net personally: "I have someone who works for me get something for me. But I do joke that I'm running out of reading material, and I'll have to read something there [on the Web]."

NCR exec to wear two hats

By Thomas Hoffman

In an unusual move, NCR Corp. has appointed one executive to run both its professional services outfit and its internal information systems operations.

Alice H. Lusk, the Dayton, Ohio, computer maker's new senior vice president and formerly of Electronic Data Systems Corp., said she hopes the two groups can play off each other's strengths to satisfy their respective customers. If successful, NCR may reap the added benefit of greater user confidence in its recommendations.

Under this scenario, the professional services group would be able to use NCR's IS facility as a "live laboratory" for its consulting work, Lusk said. If the services benefit NCR's IS operations, then they should be applicable to external customers, Lusk said. She will step into her dual role this week.

Two for one

Lusk said she still has to formulate a strategy for the two units. But one plan she mentioned is to measure NCR's IS staff performance based on the company's business results. Lusk wouldn't say how she intends to do that.

Analysts remained cautious about Lusk's — or anyone else's — ability to successfully manage two organizations on a granular level.

Lusk said her role as a senior vice president wouldn't be to "micromanage specific [IS] projects," but rather to build a "complementary" partnership between services and IS.

One NCR customer praised their strategy. "Too many vendors practice on customers. [NCR's efforts] are innovative," said Bill Miller, a senior director of telecommunications and technology at Continental Airlines in Houston.

NCR's Alice H. Lusk: *Blending line and staff roles is 'very unusual,'*

Analysts and observers said NCR's approach should comfort other IS directors. "NCR is saying, 'We're not asking you to trust any technology that we're not planning to use ourselves,'" said Christine Ferrusi-Ross, an analyst at Dataquest Worldwide IT Services Group in Westboro, Mass.

NCR, which AT&T plans to spin off as a separate company in January, has 4,500 employees in its worldwide professional services group and 1,800 IS staffers.

Lusk replaces Ronald L. Fowinkle, NCR's previous chief information officer, who resigned in June for personal reasons.

Bob Carpenter, who had overseen all of NCR's services activities, will continue as senior vice president in charge of customer support services and data services.

NCR's professional services practice is one of the company's fastest-growing divisions. Sales for the unit grew at a healthy 20% clip last year and contributed $600 million to the vendor's $3 billion worldwide services business. NCR wouldn't disclose its annual IS budget.

The blending of line and staff functions is akin to what KPMG Peat Marwick has done.

The New York-based Big Six consultancy earlier this year tapped Allan Frank to act as its chief technology officer and to head its emerging practices consulting unit.

That strategy helped KPMG pick an intranet model over a groupware architecture for knowledge management, which is the sharing of intellectual resources across an organization. The combination has given KPMG "a strong idea of what technology can do to help their company and their customers," Ferrusi-Ross said.

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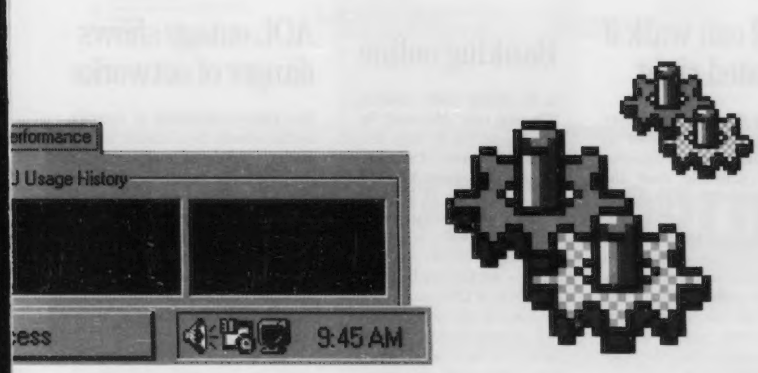

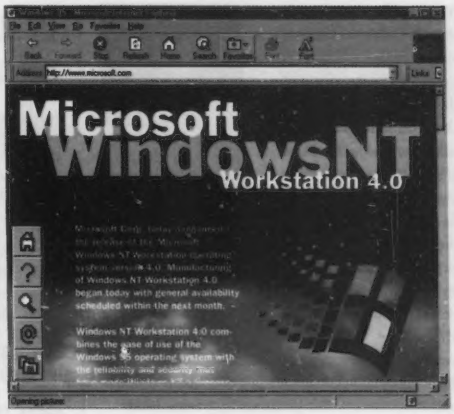

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Editorial

Hired guns

Corporate America is outsourcing its IS future by turning its technical employees into consultants.

Our love affair with layoffs is decimating the ambitions of the very people who should be preparing to run IS departments in the future.

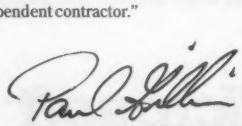
This reality hit me last week when I shared lunch with a group of frontline IS professionals from large companies. Though almost all were career IS people, few aspired to management; they saw it as a career sinkhole. "You can get rid of middle management, but you'll always need programmers," one said. Added another, "Middle management looks kind of scary these days." A third noted that the last 10 people who left his department did so to become consultants. Some were even hired back to do the same work, only not on the company payroll.

Who can blame technical professionals for not wanting to climb the corporate ladder? Consultants with SAP applications skills can command up to $500 per hour on some projects. Smalltalk or C++ jockeys can earn $200,000 per year. Even consultants with basic Cobol skills can command $75 to $100 per hour fixing year 2000 problems. You're your own boss; you get paid for every hour you work; and you're always in demand. Who wants to work 60 hours per week for $40,000 per year when the alternative is so good?

Corporate IS managers complain a lot about the skills crisis, but they should point the finger of blame upward — and at themselves. Corporations have relentlessly hacked, outsourced, downsized and consolidated their IS employees for years in the name of "efficiency" and "flexibility." Then, they've often hired those same people back without the baggage of benefits, training, career development and other overhead. Contracts have replaced commitment.

In the process, corporations have created a generation of technologists who care more about their own skills than the companies for which they work. These people have no loyalty to their employers because their employers have no loyalty to them. And every tenth time the phone rings, it's another recruiter beckoning.

Corporate America created its own skills crisis by choosing not to invest in its employees' skills. Downsizing and outsourcing have put many of tomorrow's IS managers on the street with a card in their hands. And the card says: "independent contractor."



Paul Gillin, *editor*
Internet: *paul_gillin@cw.com*
www.ultranet.com/~pgillin

Letters to the editor

IS staff can walk if not treated right

Any company that wants a surefire recipe for increasing turnover in their information systems organization should definitely read the "Tough crowd" article in your Aug. 19 issue.

They should especially focus on areas of the article that detail how to skimp on training and how to keep those budget cuts rolling right along. Those are absolutely surefire ways to encourage your IS staff to walk quickly to the exit door with resignation letter in hand.

There are many outstanding companies, like the one I work for, that have many wonderful employment opportunities for abused, mistreated, technically talented IS folks. The age of "turn them and burn them" is over. There are more jobs than there are technically talented IS people. So, if you want to keep your IS folks, you'd better revisit your budgets and your commitment to training.

Pat Allen
Frontier Information Technologies
Rochester, N.Y.

Banking online

In M. Arthur Gillis' column, "Opening soon: Microsoft National Bank" [CW, Aug. 26], the author implies that online banking has flopped in the past.

That came as a surprise to me, and it probably is a shock to Security First Network Bank — my Internet bank, located at www.sfnb.com.

I keep my checking account and money market account there, pay most of my bills, have a cash card, get reports and can reconcile my accounts — all essentially without paper.

For me, the service is excellent, and, once more, I get to avoid doing business with Microsoft. Gillis needs to get current about what's going on with online banking.

Stanley Kritzik
Partner
Metropolitan Associates
Milwaukee

AOL outage shows danger of networks

The 19-hour shutdown of America Online should be a clarion call to anyone thinking of implementing a network device system and a repudiation of those who see the network device as a replacement for a full-fledged networked PC.

All those people who were unable to log on to AOL were still able to get work done because most of their applications and data were available locally.

If my network goes down, my PC might be less productive, but it would certainly be more productive than a network device in the same situation.

A whole company dependent on network devices would be in real trouble if it had an AOL-style blackout.

All this talk about network devices is an idea as dumb as the terminal we are being asked to buy.

The companies doing the asking don't want to play along with Microsoft and plan to build a new playing field so they can be in charge and cut Microsoft out. The network device is potentially valuable in some areas, but as a replacement for a real computer that can do real work? Get real.

Maury Hancock
Richmond, Va.

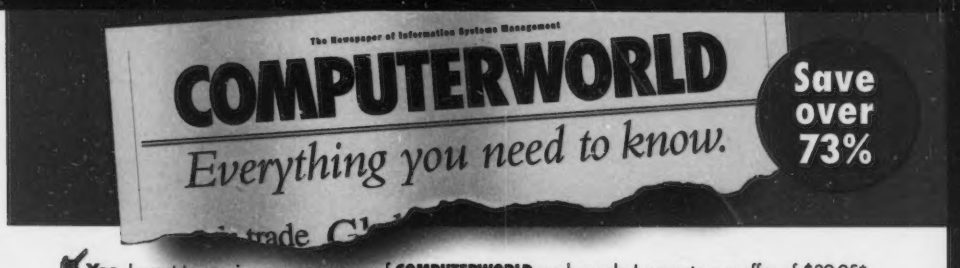
Wonderful! Amazing! Incredible! — Not!

I sympathize with Paul Gillin's plight of being bombarded with hyperbole ["Paradigm drift," CW, Aug. 5]. If you do an AltaVista [World Wide Web] search submitting "wonderful and amazing and incredible" you will get a word count on "incredible" at 128,672; amazing at 170,424; and wonderful at 295,778. I checked about 10 of these Web sites, and none of them was really wonderful, amazing or incredible.

But if you look around, the computer industry does not have a monopoly on hyperbole. Getting away from the hype only requires finding people who are actually responsible for the products, the design issues, the infrastructure, the deadlines and balancing the books — and the people who keep the heating and air conditioning working.

Robert Hoffman
Tucson, Ariz.

■ Computerworld welcomes comments from its readers. Letters should not exceed 200 words and should be addressed to Paul Gillin, Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.



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(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
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Networking Products ☐ Yes ☐ No

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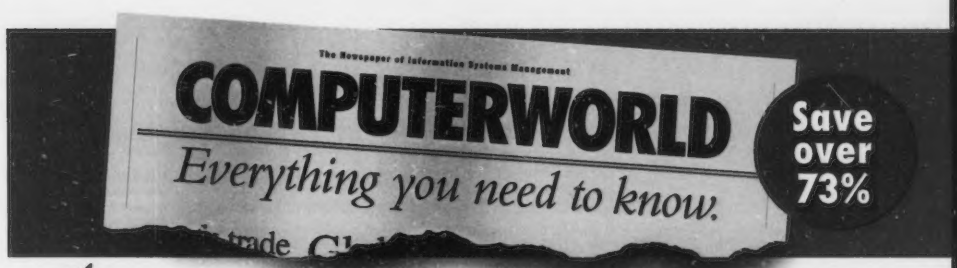

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David Strom

Why I hate off-line Web browsing

Off-line browsers are cheap, but, like VCRs, they're too hard to program.

The Web explosion has brought with it entire categories of useless software to keep us pundits fully employed and occupied. The latest rage is a series of off-line Web browsers. These little gems supposedly make it easier to download Web pages to your local hard disk so you can surf disconnected from the Internet.

Well, that's nice, but these products don't really deliver the goods. That's unfortunate because the need is real.

For example, have you ever tried to give a presentation about Web surfing in front of an audience? Something usually goes wrong. Either you lose the modem connection or the sites are too crowded, sluggish or just plain unavailable.

Another situation ripe for off-line browsing is all that time we spend on airplanes that could be spent browsing the competition's Web site.

To meet these needs, there are plenty of products to choose from, including Traveling Software's WebEx, First Floor's SmartBookmarks, Freeloader's Freeloader and Open Market's OM-Express. They don't cost much — typically $25 to $50 — but you get what you pay for. These products are difficult to use and don't always download what you intend.

I am reminded of my father's VCR constantly blinking 12:00. I offered to show him how to set it up after the last power failure, but he couldn't be bothered. He uses it for playing tapes, not recording them. Time-shifting his favorite TV shows? No thanks. Yet that is largely what off-line browsers do. They shift the act of viewing a Web page from the present into the future. Like Dad's VCR, the trick is setting it up so you don't end up recording something at 2 a.m. Tuesday when you meant 2 p.m. Monday.

Peter Mac

Frankly, the problem is that the user interface for online Web browsing is hard enough to use without saddling it with another piece of quirky software.

Don't think so? Here's a little test. Find some users who have never Web surfed (there must be a few isolated souls left at your company who still interact with people rather than the Internet), and place them in front of the computer. Bring up your Web browser with a blank page, not your usual start-up page. Now announce that the treasures of the Web await them, and walk away.

How many can figure out all that "www.whatever" nonsense and know where to type it? How many can find a search engine (such as Yahoo or AltaVista) or navigate through all those little underlined phrases in blue? Now add a "recording" mode, which schedules the recording of Web pages for off-line viewing. Is it clear whether they're reading a file from their disk cache, the off-line browser or directly from the Web? This isn't yet a product for everyone — not even close.

There is hope, of course. Many of these products are the first versions and are bound to get better. They will be undergoing continual beta versions in the best tradition of Everything Web. And just like VCR Plus, in which you enter an eight-digit number to record your favorite TV shows, maybe an industry standard for recording your favorite Web sites will be developed.

But in the meantime, stick with browsing the Web in real time and read papers on your next flight.

Strom, a consultant in Port Washington, N.Y., publishes the newsletter "Web Informant" at www.strom.com.

Ralph Soucie

Can banks survive the online onslaught?

IS could help by administering small doses of technology to boost customer service.

Recently, Hugh McColl, chairman of NationsBank, admitted to *The Wall Street Journal* that he is scared of what technology might do to his business. That isn't something you'd expect from the architect of a $192 billion banking powerhouse. Clearly, though, trouble lies ahead for banks.

The endgame of the recent bank merger wave looks pretty bleak. Eventually, some eight to 12 banking behemoths will blanket the country. These giants will look, act and smell the same to consumers. Absent some sort of blockbuster development, the entire industry seems headed for the same fate suffered recently by the large retailers.

Technology can add value to generic banking services.

But that blockbuster development is inevitable, and it surely will be driven by information technology. Technology — at least the leading-edge stuff that creates monster opportunities — isn't most banking executives' major stock-in-trade, so they don't even know where their future competitors are going to come from.

To be sure, banks are trying some new tricks as they scrounge for growth. Some, for instance, are using automated teller machines to dispense coupons and sell event tickets. Not a bad idea, but it still doesn't solve the core problem. Electronic home banking software seems a better fit, but so far, it has generated me-too products and little profit.

Meanwhile, bankers' favorite retail customers — cash-rich individuals with low transaction activity — are a threatened species. Taking money from these customers and lending it to free-spending Baby Boomers is really the heart of retail banking nowadays. But families who inherit such liquid assets from their parents are likely to apply much of this loot to debt reduction.

The problem is that consumers don't perceive high value in generic banking services, and with good reason. As surely as you're reading this, within a generation we'll be carrying our financial assets around on some form of smart card. You'll deal with your depository bank much as you interact with the bank that issues your credit card.

But the irony is that all this doesn't have to be the death knell for the banking industry. Banking executives simply need to worry less about high-tech rivals and more about the *value* they add to customer services.

Take the lowly bank statement, for example. What if a bank offered small businesses the option of receiving their bank statements in electronic form, say, as an Excel spreadsheet file? Why not provide a listing of canceled checks for the entire fiscal year? The owner could then take this disk file, along with his check register, to his accountant. The accountant would then add data such as payee name and the date the check was written.

For a small business that writes 100 checks per month, this could save a few hundred dollars in fees. That's a bank service that packs a punch, yet the incremental cost to the bank of providing the service would be very small.

Numerous variations are possible. For instance, nonbusiness bank customers might find it useful to flag tax-deductible payments by putting an X in a box when they write the check. The bank can then provide a year-end listing of tax deductions — a great headache-buster at tax time.

It doesn't take advanced technology to deliver services such as these. What it takes is customer-oriented thinking, combined with simple awareness of how technology can support a new value proposition.

So, while bankers should heed Andy Grove's "paranoia is good" message, they should worry less about technology threats and more about an industry culture that's rooted in an assumption of entitlement.

Soucie, author of three books on computers, is a client/server systems consultant. His Internet address is 72411.2545@compuserve.com.

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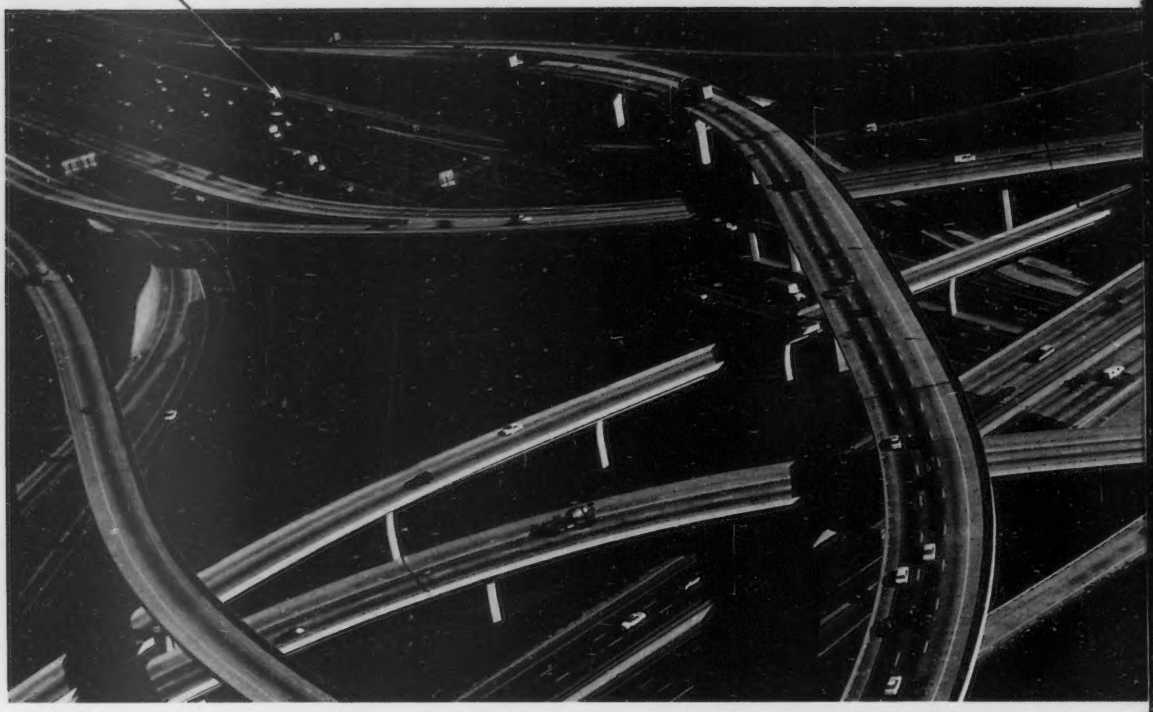

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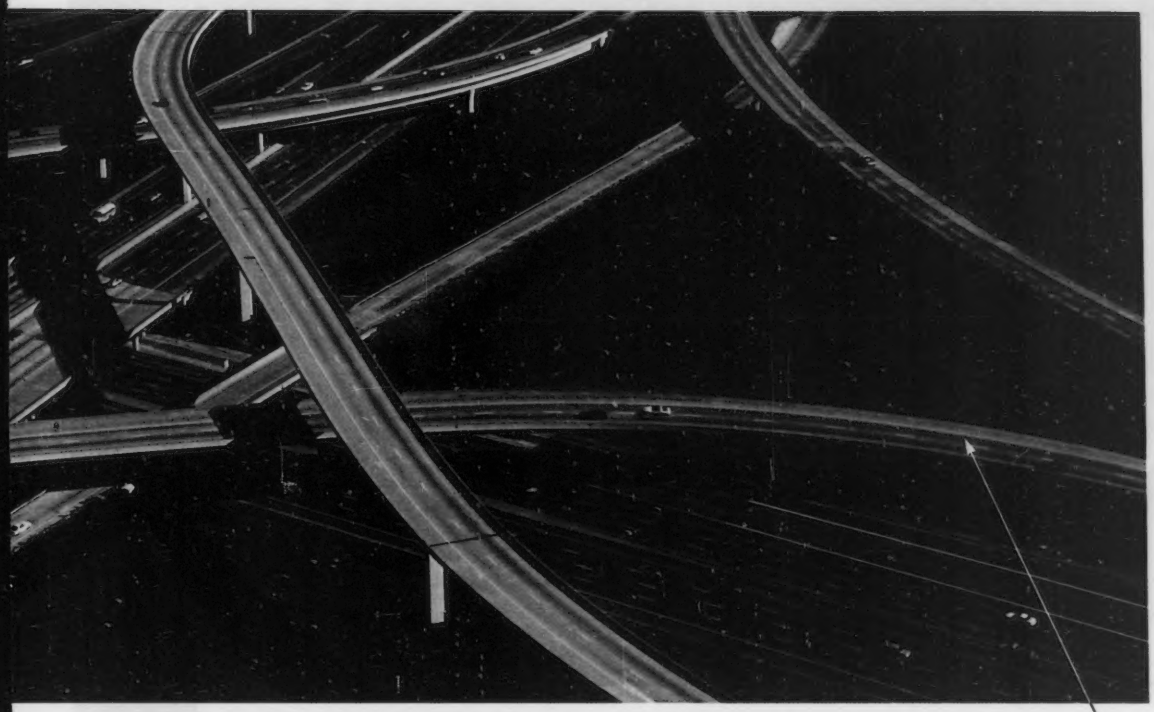

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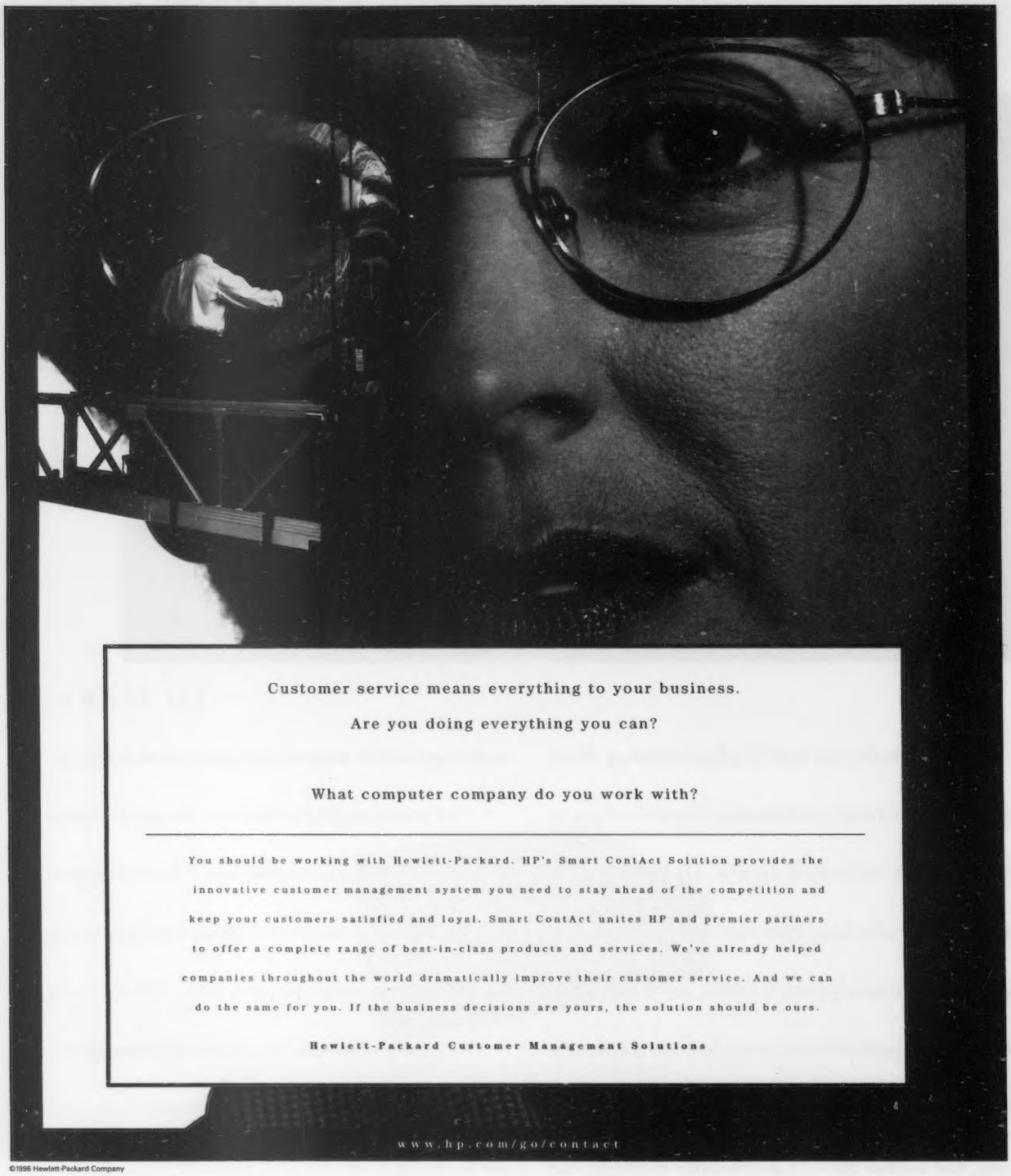

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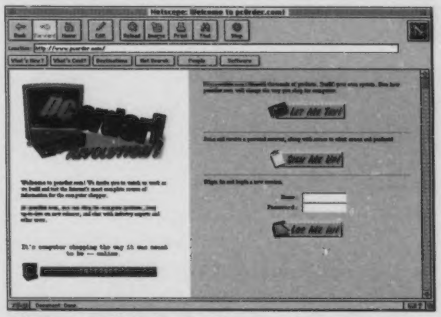
Servers & PCs



PCOrder.com's Web site *offers subscribers price comparisons*

PC shopping goes online

By Justin Hibbard

Companies fed up with the high cost of procuring PCs are enlisting the help of resellers and the Internet to automate PC buying.

A recent study by Giga Information Group, Inc. in Cambridge, Mass., found that processing one purchase order can cost a user company up to $150. Add to that a lengthy approval process and the cost of "renegade" purchases — PCs bought from non-contract vendors — and procurement begins to drain information technology budgets.

Online purchasing

Cost-savings

To reduce procurement costs, companies are demanding that suppliers offer online purchasing systems that will let buyers compare pricing, features and availability across a range of vendors, according to the Giga study.

PCOrder.com, a start-up in Austin, Texas, provides such a service on the World Wide Web to 2,500 active members. Among them are United Parcel Services, Inc., Reuters and BASF. For $1,000 per year, a reseller can open a PCOrder.com account for a customer. An information systems department can then enter the company's standard PC configurations in a form and compare current pricing and availability from distributors and product specifications from vendors.

Some distributors are also offering their own 'net-based ordering mechanisms free to their reseller customers.

James Pollard, chief information officer at Tech Data Corp., said his company provides a system based on open standards so customers can import information from other distributors. Distributors can offer such services free because they decrease overhead, and the savings are passed on to resellers and end users, Pollard said.

Evelyn Freedman, client services liaison at Lib/Go Travel, Inc. in Ramsey, N.J., said distributors have passed on savings to her company through PCOrder.com. "I've found the prices in there are slightly lower than what I'm getting from my sales rep," she said. Freedman said she suspects the low prices result from replacing the sales representative with an automated system.

Gary McDonnel, assistant vice president at NationsBank of Texas in Dallas, doesn't use

Shopping, *page 49*

Big Unix iron

NT servers prompt vendors to challenge mainframes

By Jaikumar Vijayan

Faced with the threat of Intel Corp.-based Windows NT servers in low-end Unix territory, several vendors are revving up their Unix boxes to give them more mainframe-like performance.

That trend is resulting in more powerful, scalable and aggressively priced servers for corporations that rely on Unix to run business-critical applications. It also gives users greater protection for their investments in hardware, operating systems and applications.

Body building

Vendors are adding the following to beef-up Unix boxes:

- 64-bit support
- Faster processors, higher-speed I/O
- Better networking: high-speed ATM and fiber channel support
- Greater scalability: support for more processors, memory, expansion slots and storage

The most obvious move is the migration to 64-bit chips. This allows Unix servers to support larger file sizes and more demanding applications.

In the past year, most of the big-name Unix vendors have announced or shipped 64-bit server designs, including Sun Microsystems, Inc., Digital Equipment Corp. and Silicon Graphics, Inc.

Performance push

Digital's Alpha systems were the first out the door, followed earlier this year by Sun's UltraSPARC-based systems.

"The vendors are all driving for higher performance levels," said Bill Moran, an analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y. "They are trying to push into space uniquely occupied by mainframes."

The most recent vendor to join the upgrade movement is Hewlett-Packard Co., which last week announced the imminent upgrade of its HP 9000 Unix lineup, with servers based on its new 64-bit PA-8000 chip [CW, Sept. 16].

Tied into the announcement were other upgrades, including new processor cards to upgrade older systems, price reductions, high-availability storage options, better network and Internet connectivity and enhanced systems management software.

Enhancements such as these "allowed us to increase the number of users supported on our [HP 9000] system from an estimated 150 to close to 400," said John Armstrong, a team leader for HP operations at Electronic Data Systems Corp. at the GMAC Mortage Data Center in Horsham, Pa.

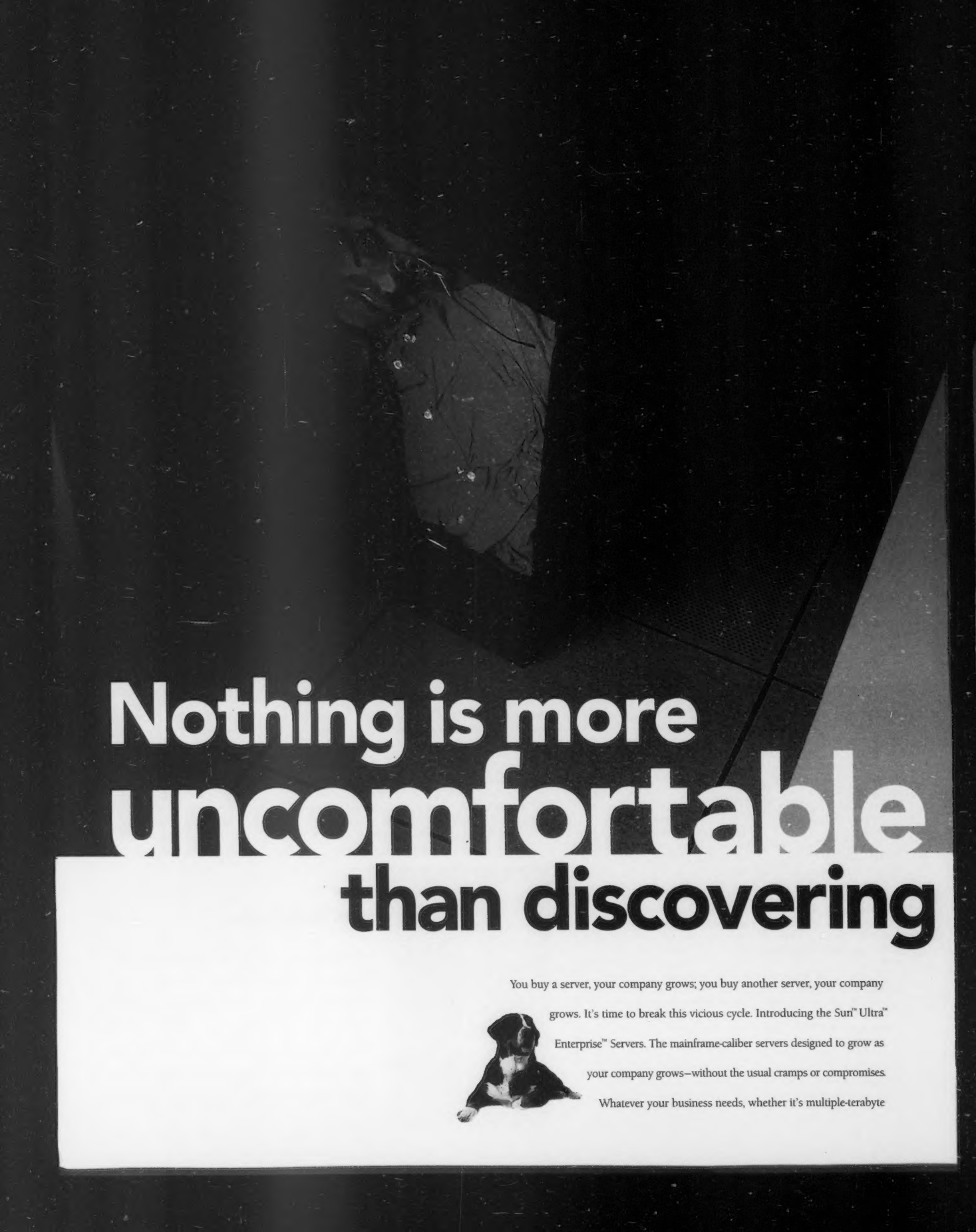
Armstrong estimates that the 64-bit chip alone helped double system performance.

Even though most Unix hardware will soon support 64-bit computing, only Digital and Sun have shipped operating systems that can take advantage of the chips, and 64-bit applications are rare. So, realistically speaking, users

Unix, *page 49*

Mini mainframe

Introduced Sept. 10, the Multiprise 2000 is the IBM Mainframe division's answer to Unix servers from vendors such as Hewlett-Packard Co. and Sun Microsystems, Inc. It scales from 3.5 MIPS, which uses less than one processor's capacity, to a 145-MIPS model with five processors. It also can hold up to 288G bytes of storage.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COMPUTERWORLD

intranets

THE MANAGER'S GUIDE TO WHAT'S REALLY IMPORTANT

INTEGRATING LEGACY DATABASES

Old iron, new links

ILLUSTRATION BY RANDALL ENOS

Blending intranets with cranky, quirky legacy systems is a dirty but necessary business

BY KIM S. NASH

As glamorous and New Age as they appear, intranet applications are not a case of out with the old, in with the new.

To create meaty applications, users must link intranets — internal systems built on public Internet standards — with legacy databases. Doing so lets companies move beyond static document publishing.

A sales-inventory application, for example, might accept an order at the company's World Wide Web site and trigger a database search to see if the item

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ANALYSIS

Old iron, new links

From green screen to Web scene: *Products such as Simware's Salvo translate old database formats to Web-style pages with clickable links*

Continued from page 1

is in stock. This, in turn, would generate a warehouse manifest for packers on the back end and an electronic-mail message to the customer about order status.

"Intranet is not just about HTML," says an IS pro at a retailer who asked not to be named. "It's about capturing whole other technologies within it."

Yet getting database data out and Web data in (and vice versa) quickly and smoothly can be a big chore. If you're just starting, take some lessons from colleagues who have been there.

Plan right

The latest intranet project plan at Access Health, Inc. in Rancho Cordova, Calif., includes a full-time programmer dedicated to scripting and database connectivity.

That's because the medical information company will need numerous applications written in the project's first year, explains technical support analyst John Determan. "We want to make sure we're not caught with this database aspect," he says.

Afterward, he expects several webmasters will be able to split the coding.

Read the fine print

Six months ago, few choices were available for linking World Wide Web applications to databases. Users could buy or download free translators such as GSQL, a gateway from the University of Illinois that transforms SQL into a format readable by Web browsers. Or, like a group at Johns Hopkins University, they could write connector code with the Common Gateway Interface (CGI) scripting language. More choices are now emerging:

- Third-party utilities link users of mainframe or minicomputer terminals to Web applications. Some tools: Teubner & Associates, Inc.'s Corridor and Simware, Inc.'s Salvo.
- Point-and-click tools help in building Web applications with database back ends. In this niche: Spider from Spider Technologies, Inc. and FrontPage from Microsoft Corp.
- Middleware lets users translate database blueprints, such as SQL, to Web-readable formats. A player here: Applied Information Technologies, Inc.'s SQLWeb.
- Translators are now available from major database companies. Look to Sybase, Inc., Oracle Corp. and IBM.

The catch: Many of the products vendors talk about are still just promises, still in beta testing. Shipping products, having hit the market only during the past several months, are largely unproven.

That's frustrating, says Rob Bilson, a

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webmaster at Amkor Electronics, Inc. in West Chester, Pa. Amkor is building an inventory intranet that will link internal Web users with an IBM AS/400 minicomputer. The company has had to stop and evaluate at least three database connectors in the past few months.

"A lot of new, great products out there look as though they will meet our needs, but many are still early in their development," Bilson laments. He adds, "The biggest headache comes not from the conversion or interfacing, but from the cleaning up of the results."

Some utilities create a plain HTML-like page out of the data. Others can extract data from a database and rearrange it into a fully hyperlinked HTML form. Not every tool supports every database — or more than one.

Go beyond gateways

Most serious database linkage isn't done with gateways such as GSQL. More users have opted for Web-specific development tools such as Allaire Corp.'s Cold Fusion or NetDynamics from Spider Technologies, Inc.

Cracker Barrel Old Country Store, Inc., for example, built intranet interfaces to a Microsoft SQL Server database with Cold Fusion. Bell Atlantic Corp. is building a database-anchored intranet with Jyacc Corp.'s Jam/Web tool kit, says Carole Franda, a webmaster at Bell Atlantic in Silver Spring, Md.

Franda's group oversees seven documentation projects, some of them run by PC users, others by Unix users. A Bell Atlantic developer is setting up a Sybase relational database with tables for each project. With Jam/Web, he is building an application to let users query the database via Web browsers.

Users can find out, for example, which parts of Project A depend on which parts of Project B. Hyperlinks in the forms produced by those queries will shoot users to more details, such as timetables and the names and E-mail addresses of team members responsible for specific tasks.

Roll your own

Johns Hopkins University's Applied Physics Laboratory in Laurel, Md., started an intranet in 1995, when hardly any commercial Web-database utilities existed.

Database programming is daunting enough without newfangled Web ideas in the mix. The lab initially wrote CGI scripts to get its internal Web application to talk to an Oracle Corp. database. But CGI, which added many layers of code to the process, was too slow. It sometimes kept scientists waiting for minutes for query results, says Bob Jernigan, a senior programmer at the lab.

Jernigan then bought development tools from Oracle to write an application to talk to the database directly. The Oracle tools proved easier to handle for

Continued on page 4

Florida Bureau of Archives and Records Mgmt.	199.44.58.12/sos/divisions/dlis/archives.html
Johns Hopkins lab	www.jhuapl.edu
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University of Illinois (GSQL)	www.ncsa.uiuc.edu/SDG/People/jason/pub/gsql/starthere.html

ONLINE

- For resources on how to integrate your databases and your intranet, see our online site at http://www.computerworld.com/intranets.

Also online this month:

- Forum with consultant Richard Finkelstein, president of Performance Computing, Inc.
- QuickPoll: What's your take on linking databases and intranets?
- Expanded interview with the Texas comptroller's office
- Link into Texas' pilot project
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Continued from page 3

staff already familiar with Oracle's database, he said.

Expect heavy lifting

But even tools made for the job can't do it all. If you aren't writing a few lines of code to compensate for the quirks of your legacy databases, you're cleaning up data.

Database queries have to be formulated just so, to get accurate results. Just as in data warehousing, Web programmers who write automated queries for end users must know how the database is set up on the back end and what kind of intranet coding will yield the sought-after answers at the front end.

"I have had many occasions when I have created the basic interface in under 15 minutes," says Amkor's Bilson, "but have had to spend quite a few hours prettying up the results and customizing other output."

Recycle administrators

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EXPLAINER

There's no single best way to make legacy databases available on your intranet. Many older systems aren't part of a TCP/IP network, so getting TCP/IP connectivity is the first step. Once you've done that, consider the following means of access:

1. **Oracle Web Server or a similar product, installed on your intranet.** It will field requests for data from a browser and extract data from a standard Oracle Corp. database or Oracle Universal Server, the database engine that handles multiple data types. Data can be automatically formatted for HTML display on a Web server, or downloaded for use on the client. An early Java application such as WebCharts from InfoSpace, Inc. in San Mateo, Calif., can also sit on a Web server, extract the data from an Oracle, Sybase, Inc. or Informix, Inc. database and download it to the client for three-dimensional display.

2. **New tools that link rapid development systems to legacy applications over intranets.** Applications built in Dynasty 3.0 from Dynasty Technologies, Inc. in Lisle, Ill., can make use of existing C++ libraries. You can give your Visual Basic and PowerBuilder applications a Dynasty Services Request Broker, which supplies TCP/IP support or the services of a transaction processing monitor, such as Tuxedo. Dynasty's Open-CGI (Common Gateway Interface) and Open-Java modules link Dynasty and legacy applications to Web servers.

3. **New Java applications.** These can access legacy databases via JavaSoft's JDBC (Java Database Connectivity) while operating across multiple computing platforms on your network. The JDBC SQL application programming interfaces is based on the same X/Open SQL Call-Level Interface as Open Database Connectivity (ODBC), the earlier API set for common database access.

— Charles Babcock, Computerworld's technology editor

Nash is Computerworld's senior editor, intranets. She can be reached at kim_nash@cw.com.

Resources

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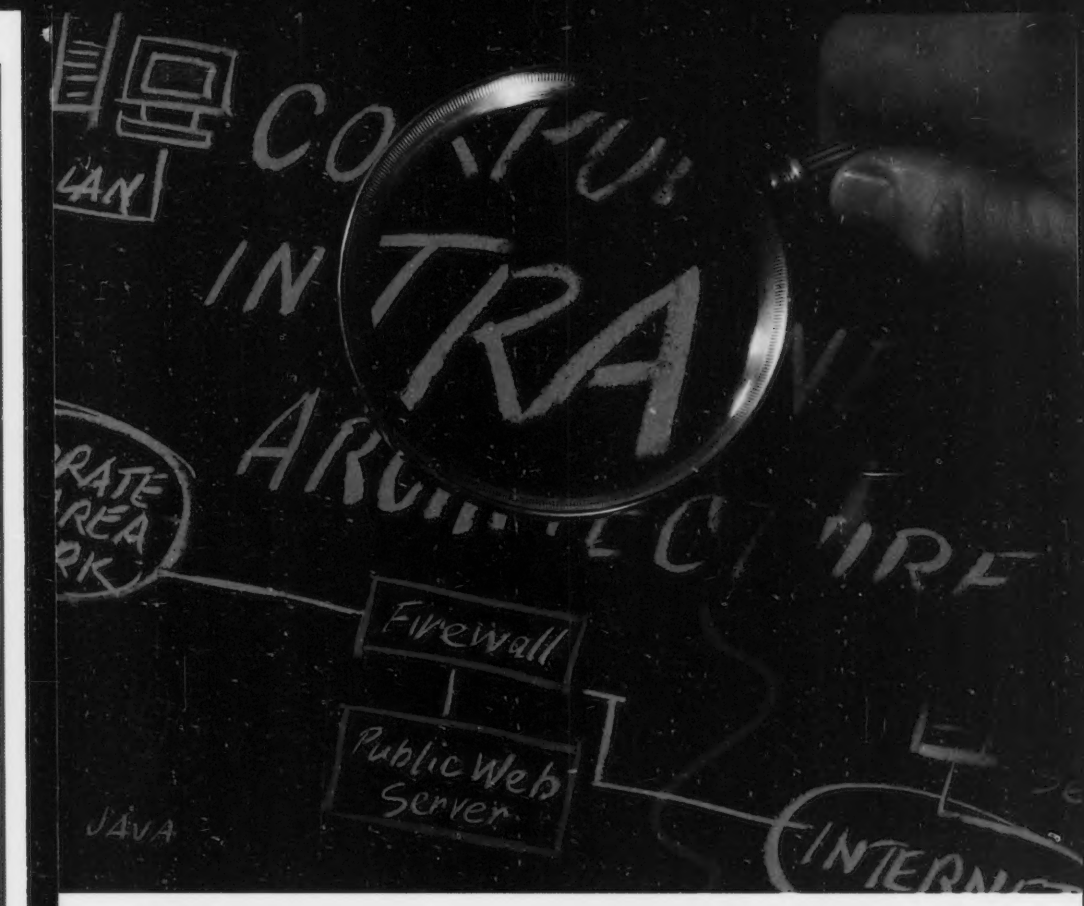

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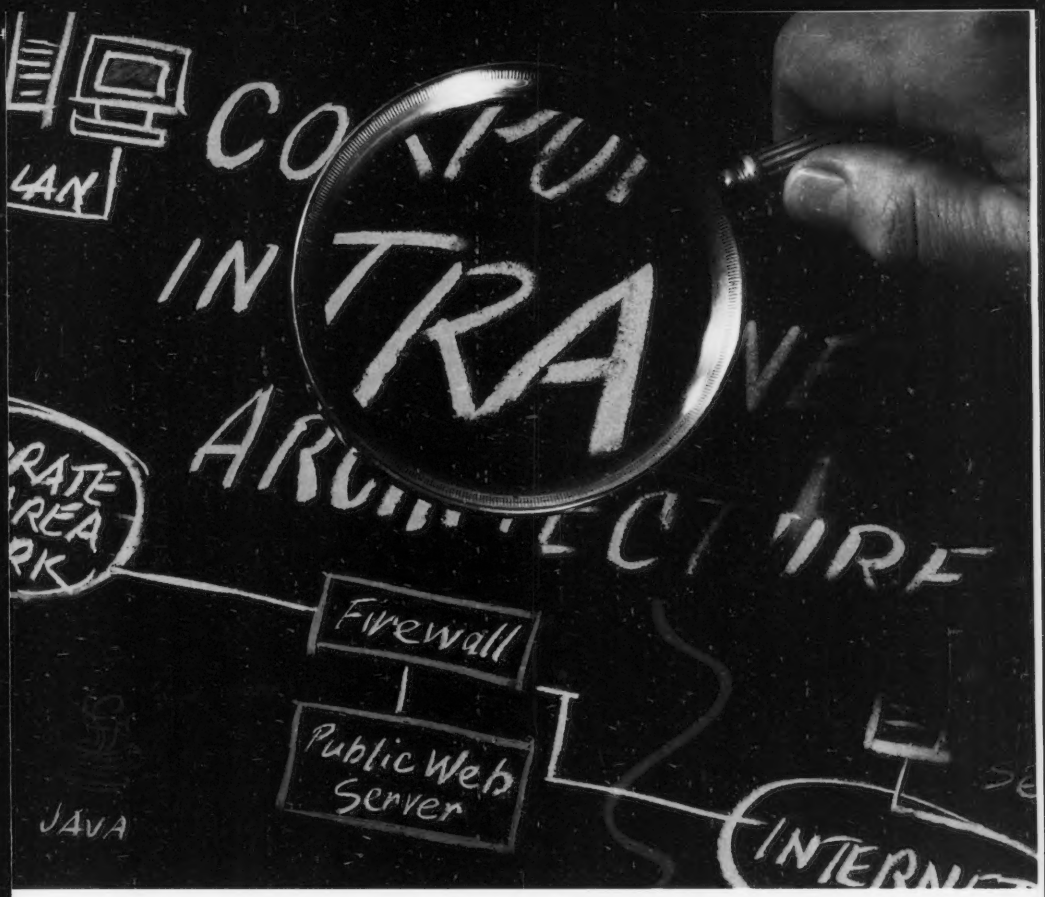

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PROJECT

Office of the Comptroller of Public Accounts

State of Texas

Austin, Texas

Ralph Hutchins, systems analyst
Stuart Greenfield, systems analyst

The Office of the Comptroller of Public Accounts for the state of Texas has a big job in a big state: It collects taxes, pays the state's bills and certifies to the legislature that revenue is available for spending.

The Austin-based department also keeps financial records for some 250 state agencies and universities. Beyond its government constituencies, the department also has a great deal of information that might be of value to John Q. Public. John Sharp, the comptroller, wants to make that information easily accessible to taxpayers wherever possible.

The push to broaden accessibility sounded like a job for distributed computing. But the department's expertise is mainframe programming, not client/server. So rather than wrestle with a wrenching re-engineering project, the state is piloting a Web-oriented approach to database uses.

"This allows us to leverage our talent," Greenfield says. The department ranks with Fortune 500 companies in terms of its mainframe operations and thinks it may have found a way to open up its mainframes and still keep its programmers focused on what they do well.

The trick: A system that uses browsers as the interface to the entire state database.

What they're doing

Piloting a project to connect 250 state agencies and departments directly to their CICS and DB2 databases. Intercepting 3270 screens and using Rexx or Perl programming to aggregate transaction codes before representing them back to users as an HTML document. Providing help function via Lotus Notes.

Replaces

Process that requires user to call a systems analyst and request a specific batch report, which is printed and mailed.

Benefits

Gives customers direct access to the data they need. Frees IS staff from mundane report-generating. Improves service to other agencies. "Our cycle time from request to delivery was a day, and now it's done almost instantaneously," Greenfield says.

Also, "it leverages our talent. We write good legacy systems. Our programmers are our most important resource."

Cost/time

Prototype cost less than $50,000. "We started in March. It's now up and going," Hutchins says. The DB2 component took only a month; CICS is still in beta testing.

Staffing

Six people: four staff people and two IBM consultants. The staffers initially worked on the project part time.

Tools

Netscape 2.0; an RS/6000; a suite of IBM software: Internet Connect Server, CICS WWW gateway, DB2 WWW gateway, DB2 6000, CICS/6000. Straight HTML, Lotus Notes.

Biggest technical challenge

Learning AIX. "I was a mainframe person," says Hutchins. Also, the lack of development tools such as those available for client/server — Delphi and PowerBuilder, for instance.

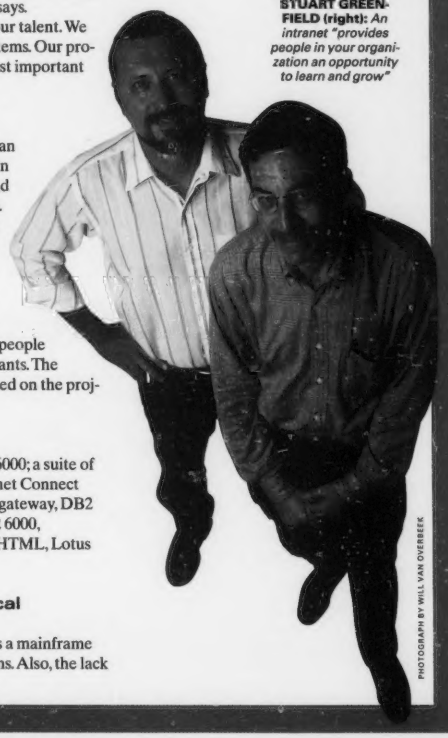
Advice for IS

"This is the way to go. It offers tremendous flexibility, it's a lot lower-cost than alternatives, and it provides people in your organization an opportunity to learn and grow," Greenfield says. Adds Hutchins: "Go Web, young man."

Next steps

Finish prototypes and work on rolling system out. Make public information available on the Web, so anyone, including large customers such as Dun & Bradstreet Corp., can do queries.

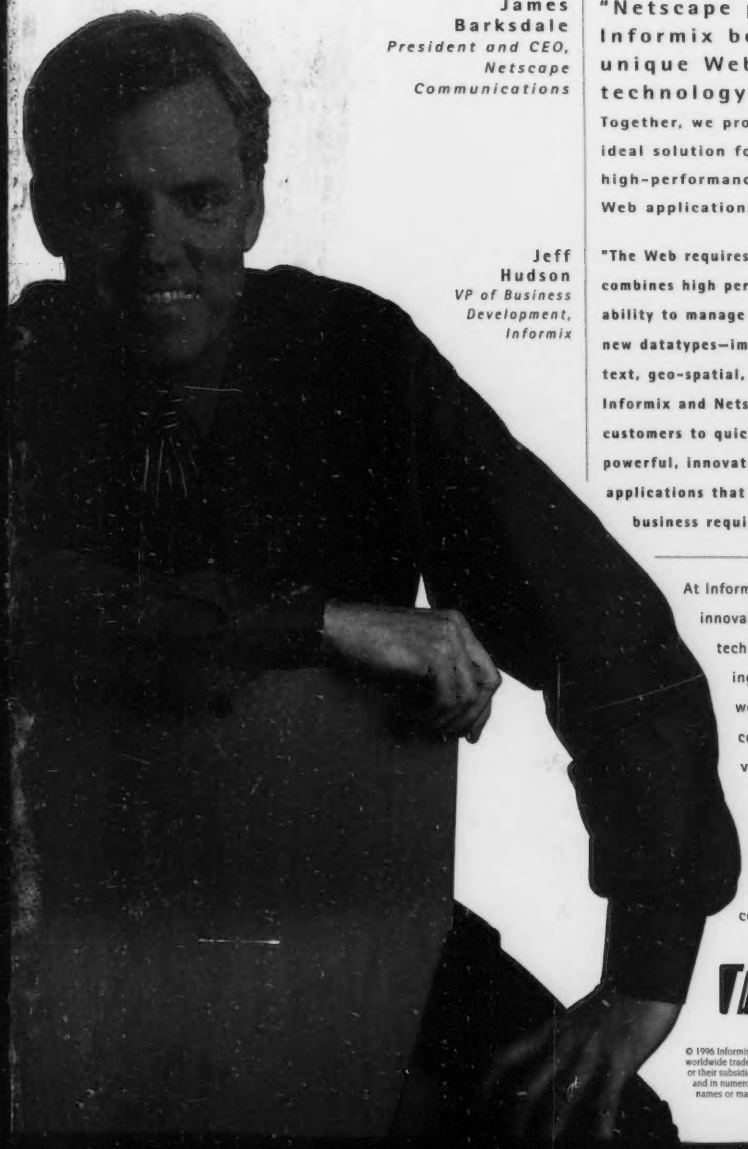
— Michael Fitzgerald, *Computerworld*'s online editor



SYSTEMS ANALYST STUART GREENFIELD (right): *An intranet "provides people in your organization an opportunity to learn and grow"*

PHOTOGRAPH BY WILL VAN OVERBEEK

Netscape's James Barksdale on Informix.



James Barksdale
President and CEO, Netscape Communications

"Netscape partners with Informix because of its unique Web database technology.
Together, we provide customers an ideal solution for next-generation, high-performance, content-rich Web applications."

Jeff Hudson
VP of Business Development, Informix

"The Web requires a database that combines high performance with the ability to manage a wide range of new datatypes—image, video, text, geo-spatial, and more. Informix and Netscape enable customers to quickly develop powerful, innovative Web applications that meet any business requirement."

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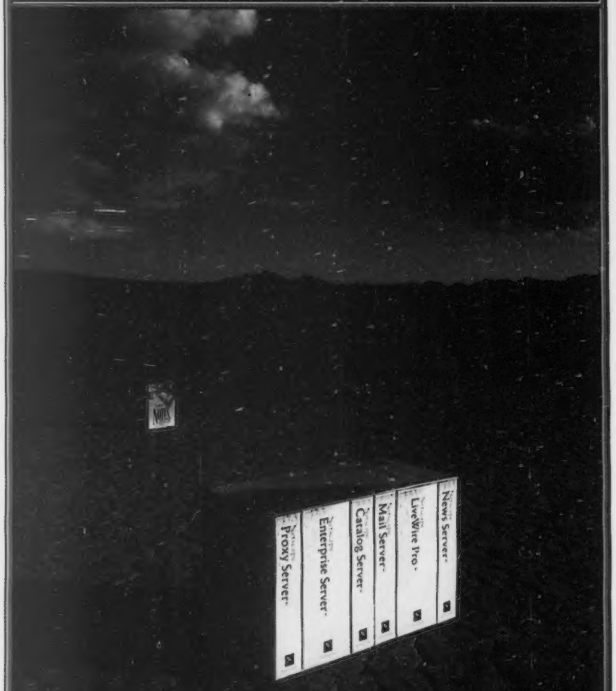

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Standards-Based Mail, Messaging & Discussion Apps	Yes	Proprietary	Proprietary
Standards-Based Distributed Search & Indexing	Yes	No	Only Thru Replication
Server-Based Java & Javascript	Yes	No	No
Native Support For Oracle, Sybase, Informix, & ODBC	Yes	ODBC Only	ODBC Only
Cost w/1,000 Clients	$33,104	$178,064	$277,820

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Fujitsu speeds up scanners and includes error-checking

By April Jacobs

ujitsu America, Inc. is hoping to ise the ante in the growing mid-nge scanner market with a new ne that features better perfor-ıance and troubleshooting fea-ures.

Four new scanners in the com-any's M3099 line include higher esolution, faster scanning and ıe ability to double-check pages o make sure they were scanned orrectly.

Obvious improvements

Unibase Technologies, Inc. in Salt ake City is beta-testing the 13099 series and incorporating ıe scanners into its data capture perations.

The process involves scanning more than 1 million pages every day for Fortune 100 companies that outsource those operations.

Tom Blodgett, vice president of operations at Unibase, said he likes the price of the Fujitsu scanners — which range from $25,995 to $27,995 — and their new features. "They've done things to make them faster, and [they have] the best paper-handling ability," Blodgett said.

Blodgett said his company also opted to buy Kodak 923 model scanners from Eastman Kodak Co. Kodak offers on-site service; Fujitsu provides it through third-party vendors.

Unibase has an internal maintenance team for its 150 Fujitsu scanners. The Kodak models cost more than the Fujitsu scanners at about $100,000 each, but they scan twice as fast and have better image quality, Blodgett said.

Using information

Kristy Holch, a principal at Info-Trends Research Group, Inc. in Plymouth, Mass., said midrange scanners are becoming more popular as companies look for ways to manage information more efficiently.

"When companies buy scanners, they don't think of it as making scanning part of their business process, but as making more effective use of the information they have on paper," she said.

Scanning is often the first step in an electronic workflow system that lets users move documents through a process automatically and track them along the way, she said.

Depending on features, the pricing for scanners can vary widely. Canon U.S.A., Inc., in Lake Success, N.Y., offers the DR-3020, a midrange desktop scanner that features a capture rate of 40 page/min. and a feed tray that holds up to 100 pages. It costs $4,200.

M3099 GH duplex document image scanner

Scanning speed	Up to 70 page/min. (simplex); 120 page/min. (duplex)
Tray capacity	1,000 sheets
User-selectable resolution	200, 240, 300 or 400 dot/in.
Dimensions	24- by 26.8- by 20.9 in.

Fujitsu's four new scanners serve as upgrades to an older series. They are aimed at the high-production corporate market.

All four models feature 400 dot/in. resolution and a 1,000-sheet document feeder.

The M3099 EX and M3099 GX can scan more than 100 page/min. at sizes up to 11 in. by 17 in.

The M3099 EH and M3099 GH can scan up to 120 letter- or legal-size pages per minute.

Unix vendors aim at high end

ONTINUED FROM PAGE 45

ıon't be able to exploit the full po-ential of 64-bit architectures for ome time.

"The availability of such hard-vare certainly positions us for 64-it applications, but the gotcha is hat our operating system is not here yet," said Gary Spencer, hief information officer at True Temper Sport in Memphis.

HP's 64-bit Unix is due to ship ı the middle of next year.

Even without full support in the operating systems, the new 64-bit Unix boxes offer significant performance gains for existing 32-bit applications, analysts said.

Vendors are packing their new processors into powerful new boxes that support symmetrical multiprocessing with high-bandwidth internal buses, high-speed memory and fast I/O subsystems. Those enhancements significantly improve server response times and connectivity.

Performance boosters such as Very Large Memory support, high-performance disk arrays and advanced server management capabilities also add muscle to Unix servers, analysts said.

Shopping for PCs goes online

CONTINUED FROM PAGE 45

on online ordering system but said he likes the idea, especially he ability to check availability.

Availability is something that natters because we order in locks," he said. Real-time up-lates on suppliers' inventory ould alert him to opportunities or buying at quantity discounts, ıe explained.

Colleen Scott, MIS director at Discount Tire Co. in Scottsdale, Ariz., also uses conventional ordering methods. But she said she would welcome an automated service for checking the prices of PCs configured to her company's standards. "It would be great to do our own configurations and come up with a bid sheet," she said. Bill Gurley, an analyst at Deutsche Morgan Grenfell in New York, said online ordering systems ultimately benefit end users. In particular, they allow resellers to automate ordering and concentrate on improving value-added services, he said. "If [the resellers] are getting paid on a service contract, they'd just as soon have the customers place the orders themselves," he said.

Online ordering systems can also lower prices, said Geoffrey Bock, a senior consultant at Patricia Seybold Group in Boston. "As a supplier, I know I'm delivering product into a rules-based environment," Bock said. "So I can afford to reduce my costs because I know I have some control over the distribution chain."

New Products

Micro Express has introduced Micros Express NP133A, a multimedia notebook PC.

According to the Irvine, Calif., company, the notebook PC can be used in sales presentations and as a substitute for desktops.

It includes 16M bytes of RAM, a 1.3G-byte hard disk drive, a six-speed CD-ROM drive, a 28.8K fax/modem and Windows 95.

Micros Express NP133A costs $2,795.

▶ *Micro Express*
(714) 852-1225
www.wpages.com/microexpress/

MicroTouch Systems, Inc. has introduced ThruGlass, a touch screen capable of sensing a touch through a one-inch pane of glass, plastic or other nonconductive material.

According to the Methuen, Mass., company, ThruGlass allows an information kiosk to work from behind a building or store window, which allows 24-hour interactive information and advertising. A ThruGlass kit costs $995.

▶ *MicroTouch*
(508) 659-5900
www.microtouch.com

Aristo Computers, Inc. has announced SIMcheck II, a memory testing device.

According to the Beaverton, Ore., company, SIMcheck II is a portable, stand-alone unit that accurately tests 72- and 30-pin single in-line memory modules.

SIMcheck II costs $2,495.

▶ *Aristo Computers*
(503) 626-6333
www.aristocom.com

HP's NetServer E Series targets low end with pricing, ease of use

By Rebecca Sykes

Hewlett-Packard Co. recently announced a new line of PC servers aimed at small and midsize businesses that have little or no IS support.

HP's NetServer E Series is based on the company's NetServer line of PC-based servers.

But the NetServer E Series' pricing and ease of use was designed to appeal to the low-end market, according to Duncan Campbell, worldwide marketing manager at HP's Network Server division.

HP's first contender in this new market will be the NetServer E30, which will ship worldwide Oct. 1 for Novell, Inc.'s NetWare and Microsoft Corp.'s Windows NT operating systems, Campbell said.

The E30's special small business-oriented features were designed to ease installation for users who can't simply call onsite information systems staff for assistance.

Easy installation

The NetServer E Series' installation features include a guided network operating system installation procedure, preinstalled network interface card, preinstalled, configured network interface card and the ability to boot the machine from a CD-ROM drive, Campbell said.

Users with a little more knowledge can do a custom installation, for instance by directing the system to work over multiple routers, he said. NetServer E Series PCs also will ship with Autopilot software, which monitors three functions — hard drive capacity, hard drive quality and condition of SCSI connections, Campbell said.

Autopilot also lets users know what to do when problems occur by indicating the proper corrective action. Users can click an "Advice" button to learn what to do, he said.

NetServer E30 pricing will range from $1,907 for a PC with a 133-MHz processor, 16M bytes of memory and no hard disk drive to $2,681 for a 166-MHz processor, 16M bytes of memory and a 2G-byte hard drive, Campbell said.

Sykes is a correspondent at the IDG News Service, Boston bureau.

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Tools help Web developers with balancing act between designers and IS, 60

Software

Managing middleware

By Michael Goldberg

Users who are relying more on message-oriented middleware are finding more packages to help manage it all.

Message-oriented middleware lets applications send a data message to another application that runs in a different computing environment. The message could be a client's request for data from a legacy system or updates to a database from another company's computer. Middleware, such as IBM's MQSeries, processes these messages and places them in queues that can be accessed by the receiving application when ready.

Users say this saves time because application developers don't have to worry about writing new communications code so that, for example, mainframe applications can send and receive data to computers that use Unix or Windows NT.

"We're looking for a systems administration tool to help us manage this diverse network of machines," said Gary Ward, a senior systems engineer at Bellcore in Piscataway, N.J. Bellcore develops telecommunications software for mainframes, Unix and Windows NT servers.

"IBM provides you the capability to monitor [messaging queues]. But they don't provide a centralized management tool" to check the status of queues on different computing platforms, Ward said.

Bellcore is evaluating CommandMQ, a systems management tool introduced last month by Boole & Babbage, Inc.

Clean up

Management software for MQSeries middleware

Vendor	Product	Starting price*
Apertus Technologies	MQView	$20,000
Boole & Babbage	CommandMQ	$30,000
Candle	Command Center	$25,000
PowerQ Software	PowerQ Series	$16,000

*Approximate. Prices depend on size and complexity of MQSeries network.

The middleware management lineup also includes Candle Corp.'s Command Center and Apertus Technologies, Inc.'s MQView. Starting in the fourth quarter, a start-up firm called PowerQ Software Corp. in Norcross, Ga., will sell its PowerQ Series of modules for managing MQSeries applications from one or many computers (see chart).

The market for message-oriented middleware is heating up, and the opportunity to give users tools grows with the complexity of these installations, said John Mann, an analyst at The Yankee Group in Boston.

Bellcore's Gary Ward *is looking for help to manage messages among diverse machines*

App management

Changes in the computing environment at Presbyterian Health Services Corp. in Charlotte, N.C., prompted the need for MQSeries systems management.

Now, because the hospital communicates with firms that perform tasks such as billing and collections, it needs to manage more kinds of applications.

Darrell Mills, a systems programmer at Presbyterian, said he can use a tool from PowerQ to test applications data that comes from a new source and get a centralized view of his MQSeries network.

"I'll be able to use it from home or from my desktop connected to [the mainframe] side. Before, basically, I had to go and sign on" to all the hospital's systems one at a time, Mills said.

Other vendors that offer messaging middleware include Digital Equipment Corp., Momentum Software Corp., New Era of Networks, Inc., Peer Logic Inc., Talarian Corp. and Tibco, Inc.

Can data be too up-to-date?

By Craig Stedman

Data replication tools are making instant feeding of data warehouses possible. But several users and analysts said up-to-the-minute replication adds to the complexity of warehousing and is still overkill for typical customers.

Replication technology lets companies copy incremental changes to their operational databases into warehouses as transactions occur or during daily network downtimes. That ensures that warehoused data is updated on a regular basis, which eliminates the risk that end users doing analysis work will make decisions based on old information.

But some warehouse project managers said that level of freshness is more than their users need — and more than their systems can handle.

How data replication is done

1. Changes to tables in the source database are identified by the tool
2. The changes can be sent directly to target databases or put in a queue
3. The information is filtered to prepare it for different target databases
4. Data transfer is executed by dispatcher and distributor modules

"For the amount of transactions that we do, and the limitations of our network, it's just not feasible for us to update the data warehouse on a transaction-by-transaction basis," said Roger Theriault, who is leading a warehousing project at National Medical Care, Inc. in Waltham, Mass.

National Medical Care, which operates 650 kidney-dialysis centers in the U.S., instead plans to move data into its upcoming warehouse in big monthly chunks using batch extract and load programs. More frequent updates aren't necessary because the firm's business cycle "is basically

Up-to-date, *page 60*

Intel attacks Mac publishing niche

By Lisa Picarille

Intel Corp. is aggressively pursuing the electronic publishing and graphics market, long the stronghold of the Macintosh.

As traditional print publishers move toward disseminating information online, the Internet figures prominently in Intel's plans to make its platforms even more appealing to the 'net set.

Electronic publishing

Intel's thrust includes courting third-party software houses to develop for the Intel platform — in some cases helping with development costs. And Intel will continue to evolve its family of microprocessors to appeal to content creators and publishers, according to Richard Dracott, product marketing manager for Intel's Pentium Pro line of microprocessors.

Industry watchers pointed to anecdotal evidence that the Intel platform is making inroads into the now loosely defined publishing market, which includes traditional print publishers such as newspapers and magazines, those developing content for the World Wide Web and corporate users who put up intranets.

Intel attacks Mac, *page 56*

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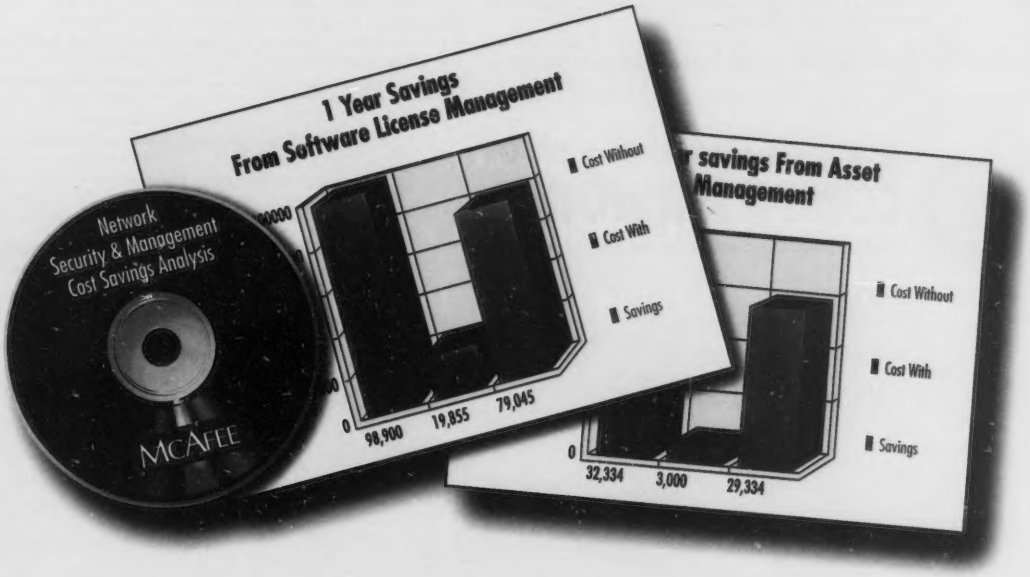

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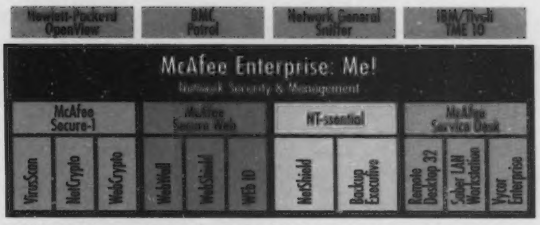

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Intel attacks Mac publishing niche

CONTINUED FROM PAGE 53

At the Seybold Seminars trade show earlier this month in San Francisco, Craig Cline, editor of the "Seybold Report," an industry newsletter in Malibu, Calif., said most Internet publishing software was shown on Intel CPUs that run Microsoft Corp.'s Windows. The Windows/Intel combination is known as Wintel.

Vendors that target publishers that are still producing a print or hard-copy product are continuing to tout Macintosh-based products, Cline said.

"We used to produce our publication on the Mac, but the Wintel platform is cheaper and there are just as many applications available. So it just seemed to make sense to give up the religious war and get on with the business of doing our job," said the information systems manager at a New York-based magazine, who asked not to be named.

"I think the move to Intel by the publishing market is not a sudden switch over. First it was a trickle, then a stream, then a river, and we expect a flood," said Chris LeTocq, an analyst at Dataquest in San Jose, Calif., a market research firm. "But users just getting into publishing are already seeing that the applications are there on the Intel platform, and they can get more bang for their buck."

But Apple Computer, Inc. is hardly conceding this key segment of its user base to Intel. Apple in May restructured the company to focus on the Internet, including the development of access, creation, publishing and management tools.

Adobe Systems Corp.'s Photoshop and Macromedia, Inc.'s Director will be available for Windows this fall. Macintosh updates will follow soon after. Both products started out solely on the Macintosh and are the two most popular graphics and multimedia programs used by publishers.

From Mac to Intel

Intel is going after the publishing market by:

- **Working** closely with third-party application developers to assure products come out first on the Microsoft/Intel (Wintel) platform
- **Touting** the advantages of its multiprocessing chips to the publishing and graphics markets
- **Targeting** users who are creating content for the Internet and intranets to make them aware of Wintel products
- **Updating** performance for graphics- and multimedia-intensive applications with the MMX version of the Pentium Pro chip

Cline said Intel-based publishing solutions are gaining in popularity for the following reasons:

- The shift to publishing online means there are more people publishing information — and more of those publishers are in corporate environments where Intel-based machines dominate.
- Windows has evolved as a graphical interface to the point where the Macintosh's advantage has become debatable. This evolution and the sheer size of the Windows market — estimated to be around 80 million users — has prompted applications developers to write for the platform.
- Intel continues to update its line of processors.

Intel machines that run Windows NT can perform multiprocessing, helpful for publishing's CPU-intensive tasks. Multiprocessing is something Apple is still working to add to the Mac OS.

Okay,
So This Is The Future
Of The Enterprise.

Software

New Products

Red Wing Business Systems, Inc. has announced Windows Inventory software, an inventory management system.

According to the Red Wing, Minn., company, Windows Inventory can track inventory by item codes (up to 24 characters), location codes or aliases.

Windows Inventory costs $595.

▶ *Red Wing Business Systems*
(612) 388-1106
www.execpc.com

NetiQ Corp. has launched NetiQ AppManager Suite.

The product lets information systems personnel centrally manage Windows NT-based systems and Microsoft Corp.'s Back Office server applications from a console.

According to the San Francisco company, the product supports Windows NT Server and Workstation versions 3.51 and 4.0. It also supports Microsoft's SQL Server 6.0 and 6.5, Exchange 4.0, Systems Management Server 1.1 and 1.2 and Internet Information Server 1.1 and 2.0.

Pricing starts at $1,000.

▶ *NetiQ*
(408) 556-0888
www.netiq.com

Avery Dennison Corp. has introduced Avery Wizard.

According to the Diamond Bar, Calif., company, Avery Wizard lets Microsoft Corp. Word users easily print on Avery laser and ink-jet products and labels.

The product is a Word add-in that leads users through a series of formatting and printing steps for printing the tops, bottoms and sides of labels.

Avery Wizard costs $10.

▶ *Avery Dennison*
(909) 869-7711
www.wizard.avery.com

CharisMac Engineering, Inc. has released Discribe 1.10, an upgrade of its CD mastering software.

CharisMac Engineering's *Discribe 1.10*

According to the Newcastle, Calif., company, the upgrade adds several new features to simplify writing CDs on the Macintosh. They include Disc-Copy, Drag and Drop and CD audio.

Discribe 1.10 costs $399.95, but upgrades from any previous version of Discribe are free.

▶ *CharisMac*
(916) 885-4420
www.charismac.com

Incentive Automation has announced Motivation Magic, software that allows managers to create custom reward or incentive programs.

According to the Batavia, Ill., firm, Motivation Magic lets users design programs with goals and a measurement system. Users can then enter data for each period and report results at the end of the program with a return-on-investment form.

Motivation Magic runs on Windows and costs $399.95.

▶ *Incentive Automation*
(630) 879-1863

Intelligent Systems International has announced Intelligent Mailer Presort and Intelligent Mailer ZIP 4, companion programs to simplify bulk mailings.

According to the Gaithersburg, Md., company, Intelligent Mailer ZIP 4 provides address correction and encoding capabilities. It standardizes addresses in a mailing list and places them in a standard layout for automated postal service equipment.

Intelligent Mailer Presort was designed to add bar coding required by the U.S. Postal Service.

Intelligent Mailer ZIP 4 adds the four-digit ZIP code extensions.

Pricing for the products starts at $995.

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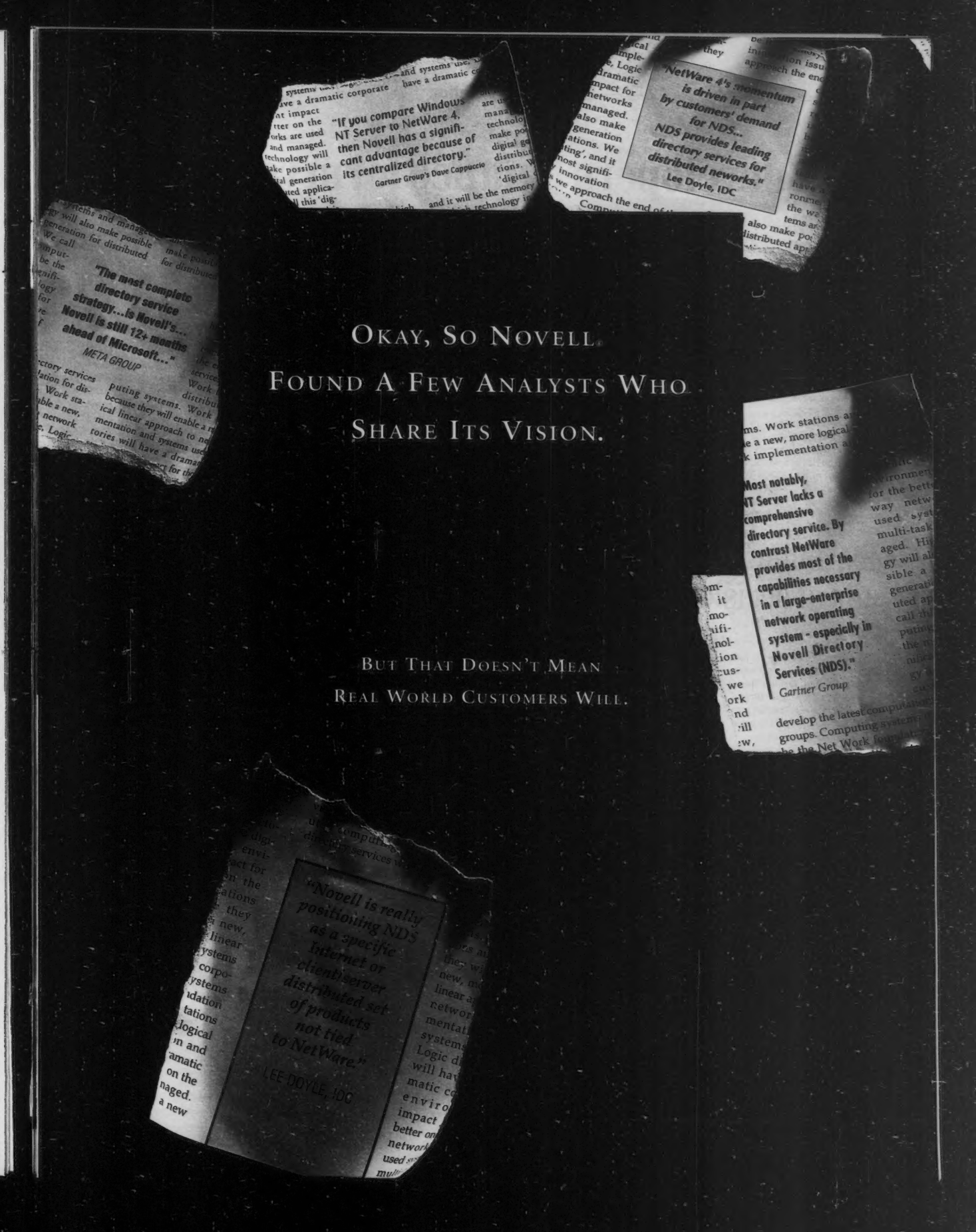

"If you compare Windows NT Server to NetWare 4, then Novell has a significant advantage because of its centralized directory."
Gartner Group's Dave Cappuccio
"NetWare 4's momentum is driven in part by customers' demand for NDS... NDS provides leading directory services for distributed neworks."
Lee Doyle, IDC
"The most complete directory service strategy...is Novell's... Novell is still 12+ months ahead of Microsoft..."
META GROUP
OKAY, SO NOVELL FOUND A FEW ANALYSTS WHO SHARE ITS VISION.
BUT THAT DOESN'T MEAN REAL WORLD CUSTOMERS WILL.
Most notably, NT Server lacks a comprehensive directory service. By contrast NetWare provides most of the capabilities necessary in a large-enterprise network operating system - especially in Novell Directory Services (NDS)."
Gartner Group
"Novell is really positioning NDS as a specific Internet or client/server distributed set of products not tied to NetWare."
LEE DOYLE, IDC

Application Development

Web developers balance form vs. function

By Frank Hayes

Corporate developers who try to build World Wide Web-based applications have to appeal to two sets of creators: graphical designers who build a flashy look and feel; and information systems developers who make sure the site does what it's supposed to do.

"You pretty much have to have tools that recognize both those functions," said Steve Rogers, vice president of online services at American Recordings, Inc. in Burbank, Calif.

Vendors are beginning to roll out tools that recognize the two kinds of creators. Progress Software Corp. in Bedford, Mass., this week will ship its $22,500 WebSpeed Transaction Server. The server provides a transaction-processing system and scripting language that links to Hypertext Markup Language pages created with designer-friendly tools such as HotMetal from SoftQuad, Inc. in Toronto and Front Page from Microsoft Corp.

"This lets us build a really nice front end, made up with frames, without worrying about the back-end processing," said George Homme, a systems administrator at Monitor Medical, Inc., a medical equipment distributor in Winston-Salem, N.C.

"As we get more into dynamic pages, it does make more sense to use tools that are familiar to each kind of developer," said Eric Thompson, director of MIS at Whittier Partners Group LP, a real estate brokerage in Boston.

Progress Software's *WebSpeed Transaction Server links to pages created with designer-friendly tools*

SunSoft, Inc. last month began shipping its own $295 Java Workshop tool set intended for experienced programmers and nontechnical Web site designers. And configuration management vendor Intersolv, Inc. in Rockville, Md., has begun testing a version of its Tracker problem-tracking system specially modified for Web development teams.

Client/server key

But not all development tool vendors are catering to both designers and developers. Web add-ons for tools such as Sybase, Inc.'s PowerBuilder simply put conventional client/server applications on the Internet.

That may pose a handicap for Web application developers as they create sites that do things conventional client/server applications would never try.

"We plan to hook in to the United Parcel Service and Federal Express sites so users can check to see where in the delivery cycle that package is after we've shipped it," Homme said. That will require Monitor Medical's Web applications to fire off queries to the UPS or FedEx sites — something for which traditional client/server tools weren't designed.

But the shift in approach is worth it, Homme said. "If it allows our customers to get the information they need and eliminates human errors in order processing, this could mean a lot to them," he said.

Platinum Technology takes vertical aim at decision-support warehouses

By Sharon Gaudin

Platinum Technology, Inc. is rolling out a prepackaged data warehousing solution for the insurance industry. Some analysts said the move to a vertical market may be a harbinger of what's to come in the warehousing industry.

Platinum's Windows-based RiskAdvisor includes a data warehouse model that stores information in insurance-industry-specific tables and focuses on extraction and reporting in areas key to the industry. It is the first product Platinum has aimed at a vertical market and the first of many to come, according to Frederick Rook, vice president of business intelligence at Platinum.

RiskAdvisor will start shipping toward the end of next month. Pricing will start at $800,000.

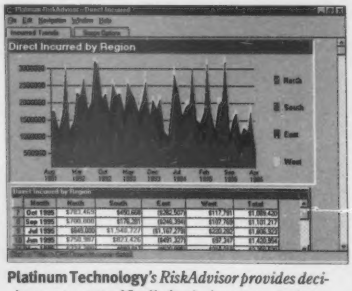
"The problem has been that [decision support] has been available to the Wal-Marts that have famous warehouse implementations. This will make it available to midsized companies," said Henry Morris, research director for applications and information access at International Data Corp. in Framingham, Mass.

Growth insured

The Yankee Group predicts that the insurance data warehousing industry will grow from $188 million this year to $480 million in 1998.

"Each industry is unique in its requirements," said the assistant vice president at a major international reinsurer. The firm employs about 2,200 people and expects between 1,000 and 1,500 of them to query the system. The company, which asked to go unnamed, has been using RiskAdvisor, which runs on Windows platforms, for the past three months.

"We were able to put together a data mart and the front end in a matter of months because they had the basic organizational structure already built," the spokesman noted. "On our own, it would have taken us at least two years."



Platinum Technology's *RiskAdvisor provides decision-support specifically for the insurance industry*

RiskAdvisor has two main components: the data model and the decision-support system. The data model is based on a basic insurance policy and claim and customer information. The decision-support part is based on Platinum's Forest & Trees, a visual application development environment. It has 19 modules designed to cover typical queries for the insurance industry.

Brian Murphy, an analyst at The Yankee Group in Boston, said many of Platinum's competitors, such as Oracle Corp., SAS Institute, Inc., Arbor Software Corp. and Comshare, Inc., are probably looking toward verticals, but Platinum is the first to enter the arena. He said he expects other companies to follow in the next year or so.

Platinum is looking at creating vertical products for the telecommunications, health care, pharmaceuticals and financial industries next, according to Rook.

Data warehouses

Can data be too up-to-date?

CONTINUED FROM PAGE 53

monthly," Theriault said.

Theriault looked at replication as a possible way of sending subsets of data from the main warehouse to smaller data marts that will be set up in a second phase of the project. But the technology isn't viable there because National Medical Care wants to summarize the data, not just capture transactions, he said.

Monthly is OK with MCI

MCI Telecommunications Corp.'s mass markets unit, which handles small business and residential customers for the long-distance company, is also content with monthly batch updates of a 60G-byte data mart that holds its billing records.

Replication might make sense in time-critical applications, such as network-usage analysis and calling-card fraud detection, said Chris Courim, manager of systems development at the Denver-based mass markets operation. But for analysis of long-term business trends, that sort of constant updating could give end users too many balls to juggle, he said.

With the data mart, "We're already giving so much information to people so much faster than they're used to getting it," Courim said. "If the numbers keep changing in the background on them, then things really get complicated."

Different billing cycles for customers also make it "easier to just wait and forecast off the whole last month's data."

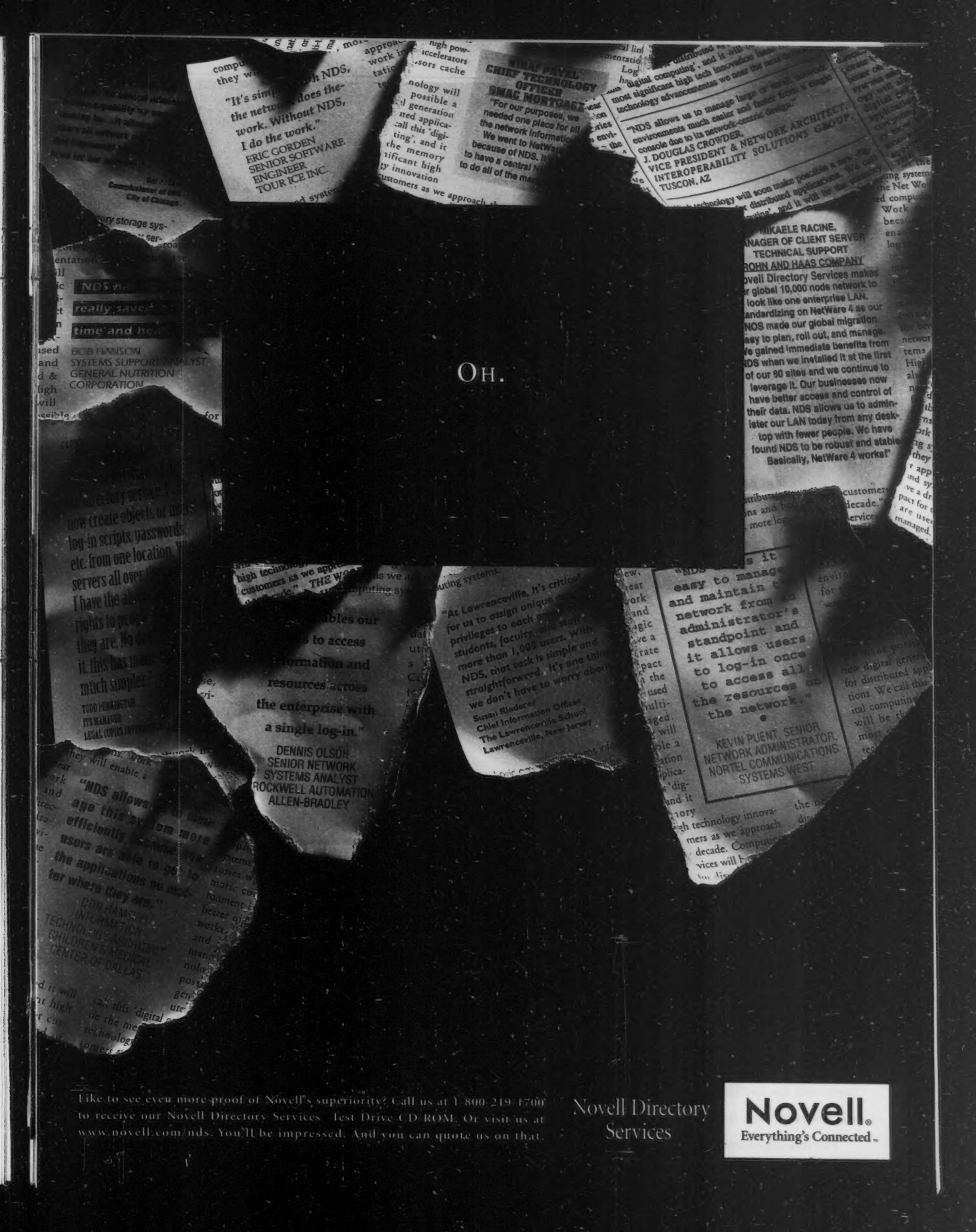
Data marts a better fit?

The major database vendors and tools suppliers, such as Platinum Technology, Inc. and Praxis International, Inc., are preaching the replication gospel to data warehouse customers. But last year's market for warehousing replication software was only $14 million, according to International Data Corp. in Framingham, Mass.

Defined data

A data warehouse is a pool of historical data culled from operational databases that can be queried to spot business trends and for decision support. A smaller version, called a data mart, holds a specific subset of a company's data or is used by an individual department.

Frank Gillett, an analyst at Hurwitz Group, Inc. in Newton, Mass., said data marts could be more practical targets for daily replication of data than "the central sort of monolithic warehouse" has been. "But [users] are just beginning to figure this stuff out," he said.



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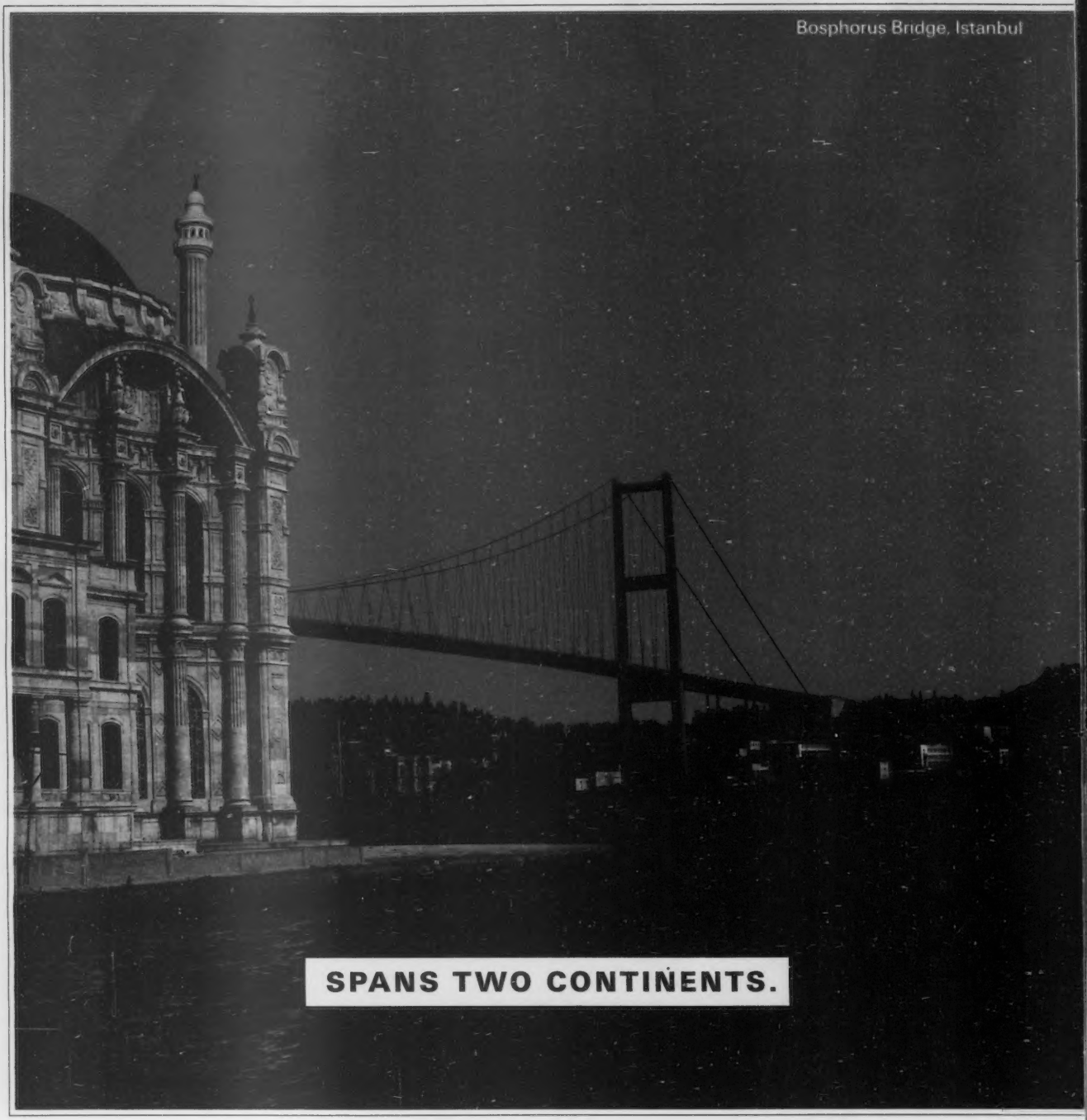

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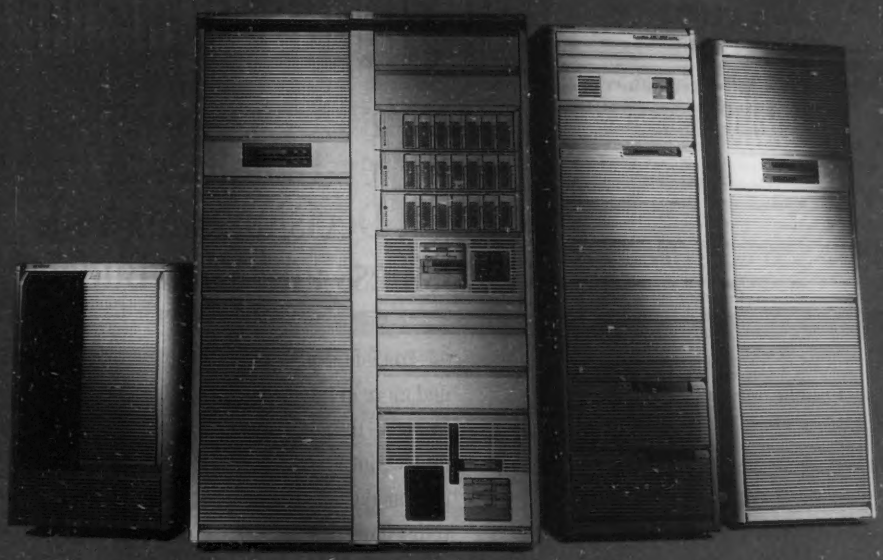

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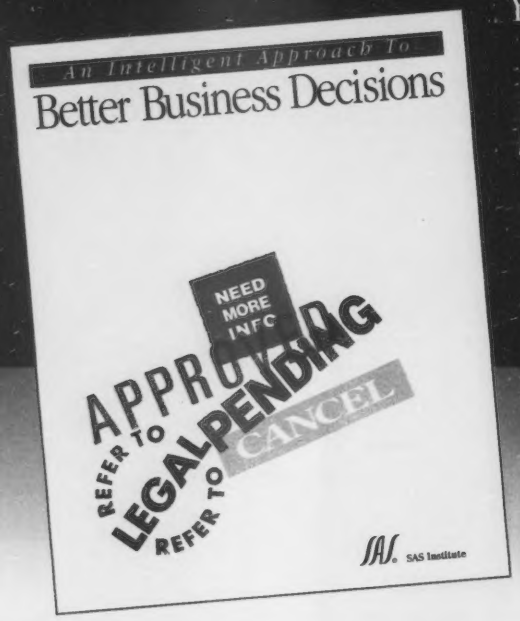

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Commentary

Nothing but net

Bob Wallace

Major networking shows such as last week's Networld/Interop '96 in Atlanta usually bring out the worst in vendor marketing efforts — some of the most ridiculous stuff you ever "hoid," in fact. Consider the following:

Take this vendor, please
Micom Communications' use of Groucho Marx to promote a voice-over-IP product may force us to take a page from *Late Show with David Letterman* and start our own Stupid Vendor Marketing Tricks segment. To draw people to its booth, the Simi Valley, Calif., vendor issued an invitation with a photo of Groucho Marx. The invite was accompanied by a plastic set of glasses with hairy eyebrows and nose (see photo). What's the tie-in between the estimable comedian and an IP product? Go figure.

Back when it used to be funny
Saturday Night Live's Father Guido Sarducci was talking "virtuous networking" last Tuesday night at a Cabletron Systems press conference at the Hard Rock Cafe. That's a take-off on the vendor's Virtual Networking scheme. Two days later, Cascade Communications took over the Hard Rock to announce remote access products. Cabletron last year had former *Saturday Night Live* star Joe Piscopo arm-wrestle CEO Bob Levine at the Hard Rock. Who says media events can't be fun? But do they have to be in the same place?

Show, don't tell
Why not replace some of the slick — and no doubt expensive — choreographed booth presentations with vendor/marketer dunking tanks?

Walk softly and carry a big stick
That's typically good advice for showgoers as vendors pull out all the stops to suck users into their booths. Friendly booth invitations are mostly a thing of the past; shoestring tackles that could make sports highlight reels can't be far off. Vendors rely heavily on scantily-clad women, free gifts and giveaways to lure users. There haven't been any reports of snares or leg-hold traps ... yet.

Getting it right
Give Sun Microsystems a hearty round of applause for its Networld/Interop marketing strategy. The

Nothing but net, *page 66*

The Enterprise Network

Creative control

Vendors chart path for the consolidation of systems management tools

By Patrick Dryden

LAN management vendors reached up into the enterprise last week at Networld/Interop '96 to manage Unix systems, just as enterprise-level vendors forged new links to workgroups.

The goal for both groups is to consolidate diverse tools, thereby streamlining server and desktop control for administrators.

Building from the LAN up, McAfee Associates, Inc. and Seagate Software showed new software at the trade show that lets operators at a single Windows NT console manage desktops and servers that run Unix, Windows NT and Novell, Inc.'s NetWare.

Leading enterprise management platform vendors also extended their reach down into workgroups. Computer Associates International, Inc., Hewlett-Packard Co. and Tivoli Systems, Inc. forged new links to LAN client/server tool kits through broader interface support.

The long view

Users caught in the middle of these efforts like the promise of unified systems management, even though they don't have an immediate need for it.

"We'll want that capability soon because we have already begun to be more heterogeneous," said Richard Miles, manager of technical services at Prentiss Properties, Inc. in Dallas. The management firm is in transition, Miles said, and is beefing up its NetWare network with Unix and Windows NT application servers.

Administrators at Georgetown University Medical Center in Washington are more concerned about applying the right tools to each business system than monitoring everything centrally from one console, said Bill Woloch, manager of the information

Seagate, *page 67*

Control suites

McAfee Associates and Seagate Software allow administrators to manage desktop systems and NetWare, Windows NT and Unix servers from one console

FEATURE	BENEFIT	IMPACT
Modular integration	Tools can be used individually, but a framework enables efficiency and automation by sharing data, events and functions	Organizations that aren't ready to consolidate management tasks can evolve at their own pace
Single point of management	Operators won't need separate consoles and expertise to manage common business functions	Reduced size and training for management staff
Management console based on Windows NT	Workgroup-level staff is more comfortable with Windows NT than Unix	Acceptance should be easier and more widespread

Combo voice/data line fills the bill at Vt. bank

By Kim Girard

Passumpsic Savings Bank in St. Johnsbury, Vt., recently combined two decisions company officials believed would be handled separately.

First, the bank wanted to replace an antiquated telephone system.

Second, it needed to link a newly built central operations center — the site of a check-imaging database critical to daily operations — to the bank's main branch more than three miles away.

"We wanted to make two separate locations work as one," said Craig Lantagne, a senior vice president at Passumpsic Savings.

On the networking side, Lantagne, who was in charge of the upgrade, considered several options. They included frame relay, Integrated Services Digital Network (ISDN) and T1 lines. The bank eventually chose a unique approach by Mitel Corp. that allowed it to merge voice and data traffic on one line.

The bank in August installed a 155M bit/sec. Asynchronous Transfer Mode (ATM) fiber backbone that connects voice and data via a Madge Networks, Inc. hub. The NeVaDa system (networked voice and data) connects a Mitel phone system with the Madge hub to integrate voice, data and images on one ATM line. This eliminates the need for sepa-

Bank, *page 67*

Passumpsic Savings' Craig Lantagne *says merging voice and data traffic on one Mitel system helped streamline customer service*

Who can telecommute?

Analysts advise companies to set formal, exacting policies for mobile workers

More and more companies are letting their employees telecommute...
Do you have 50 or more employees telecommuting today?

Base: 79 Fortune 1,000 companies

...but many are working overtime at home.
How would you classify your telecommuters? (Of the 62% who answered yes)

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Source: Forrester Research, Inc., Cambridge, Mass.

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"More and more people want to telecommute at our company," said Steve Ludovice, staff systems analyst at Exxon Co. U.S.A. in Houston. "It's important to figure out some of these remote access issues."

Inclusive policy

Marlo Kosanovich, an analyst at Meta Group, Inc. in Stamford, Conn., said one of the most important steps to take in implementing a corporate telecommuting program is to devise a solid policy — including determining who works at home.

"When you don't have workers in the office, you have to keep in mind that many of the organizational and management structures have to be redesigned," Kosanovich said.

"You have to take the work to the worker now. And it's important to keep up efficient communication links and to maintain some level of camaraderie so things don't fall through the cracks," he said.

Teleworkers need the right technology to get the job done, and technical support for at-home workers needs to be bolstered, Kosanovich said.

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And companies should consider installing high-bandwidth lines, such as Integrated Services Digital Network, Kosanovich said.

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But telecommuting still hits significant snags among some high-level corporate executives who don't trust their employees enough to let them work at home, users and analysts said.

"My company wouldn't want to set a formal telecommuting policy because they fear that everyone will want to do it," said a user who didn't want to be identified.

Tele-leap

Business Research Group, Inc. in Newton, Mass., said in a recent report that the number of large and midsize U.S. companies that allow telecommuting increased from 1.3 million in 1994 to more than 3 million this year.

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The survey showed that telecommuters are the fastest-growing segment of at-home workers.

Fail-over server product may ease NetWare upgrades

By Laura DiDio
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LANtegrity is different from other products such as Preferred Systems, Inc.'s DS Standard, which is geared toward migrating user information into a directory that puts upgrades online. Novell's SFT III server mirroring product is similar to LANtegrity, "but it's more costly and time-consuming," said Eric Hindin, an analyst at The Yankee Group, a consultancy in Boston.

To upgrade from NetWare 3.x, the network administrator disconnects the NetWare server from the network, and the LANtegrity server takes over within 15 seconds. No reboot is necessary. This pleases customers such as Matt Rice, a senior network manager at U.S. Trust Corp. in Boston. U.S. Trust plans to install LANtegrity in the next few months. "It will save me time and ensure that if I make a mistake, I don't lose any data and won't have to spend time replicating any lost data," Rice said.

Users connect to the LANtegrity server as if it were their NetWare 3.x or 4.1 server, and they can access the files, data, network printers and desktop applications they used previously. LANtegrity is shipping now.

Backing up NetWare

LANtegrity
Availability: now
Price: $4,950 for a 100-user license

FEATURES INCLUDE:

- It can take over as the backup server within 15 seconds
- One LANtegrity server can support up to 1,000 users
- It gives users an identical NetWare security and file system
- No server reboot is necessary
- No downtime
- A built-in On-line Data Vault archives the contents of the NetWare server, which ensures that no data is lost

Nothing but net

CONTINUED FROM PAGE 65

Mountain View, Calif. vendor shifted the emphasis from a product focus to entertainment. Sun invited reporters, analysts and customers to a concert by Little Richard. After a long, hard day on the show floor, people want to dump their million-pound bags of product literature and relax.

Honorable mention

A column on vendor marketing tactics wouldn't be complete without mention of Nortel's famous Evergreen effort. Nortel, formerly Northern Telecom, for years drilled into people's heads that its telephone systems lasted forever — and hence were like evergreens. To set up one large announcement, Northern sent out Bonsai trees. The effort was a hit; the announcement was made during the holiday season, and many reporters found the trees suitable for re-gifting. Kudos.

Living on the edge

The Top 3 signs that it's time for a vacation: 3) You have a hard time finding your car in the company parking lot. 2) You are talking to your voice-mail messages. 1) You point the little security system box on your car key ring at your PC to start it up.

GroupWise Web features get kudos

By Sari Kalin

Novell, Inc.'s plan to bring the document management capabilities of its GroupWise electronic-mail package to the Web has earned early praise from some observers.

Novell gave a sneak preview of its World Wide Web publishing initiative recently at a party to celebrate the release of GroupWise 5. The Web document management feature, code-named the Jefferson Project, will be available in the first quarter next year.

E-mail

Using Jefferson, documents stored in a GroupWise library will be dynamically presented as a Web document when a user asks to view them. Users can request documents by doing a full-text search or by asking for a specific uniform resource locator.

The author of a document can decide whether it should be published to an intranet or the Internet. E-mail administrators can also decide whether any documents in a particular library should be published. GroupWise's Web Access feature already offers password-protected Web-based access to GroupWise mailboxes and documents.

GroupWise users reacted favorably to the brief Jefferson demonstration, saying document management over the Web would make GroupWise more useful to companies that are building intranets.

"We are just putting together our intranet now, and Jefferson offers lots of possibilities for us," said John Ellis, a senior systems engineer at GKM in Wolverhampton, England, and chairman of Novell's GroupWare User Group in the U.K. "It seems to give us lots better control and ease of publishing."

Lotus Development Corp.'s Domino, a Notes-based Internet application server that competes with GroupWise, publishes only Notes documents to the Web, said Stewart Nelson, vice president and general manager of Novell's groupware division.

GroupWise will be able to publish documents created in other applications to the Web, Nelson said. "Notes just keeps Notes documents," said Linda Myers-Tierney at International Data Corp. in Framingham, Mass. "The reality is, people are using a ton of different document applications."

Kalin writes for the IDG News Service's Boston bureau.

Briefs

Jitter debugger

Tinwald Networking Technologies, Inc. in Mississauga, Ontario, has good news for those who manage Token Ring networks, which are prone to distortion called jitter. Enhancements to LinkView 2000, Windows-based LAN analyzer software, help identify errors caused by jitter and measure the LAN's tolerance. The kit costs $9,995 and includes Token Ring adapter, hardware and cable testers.

Aid for enterprise

Molloy Group, Inc. in Parsippany, N.J., is improving the connectivity features in its Top of Mind help desk software. Version 5.0, due this fall, supports Microsoft Corp.'s telephony interface and Systems Management Server and Hewlett-Packard Co.'s OpenView for Windows. It has an application programming interface for linking other tools, smarter call-escalation software and an interface via the World Wide Web.

Seagate

CONTINUED FROM PAGE 65

service center.

"In the future, consolidated tools should make our staff more productive and reduce its size through streamlining and automating management tasks," Woloch said.

Woloch views the new McAfee suite not as "a silver bullet" but as a balanced set of SQL-based tools that complements others used at the school and hospital.

Suite mentality

Vendors are trying to make users see the value of integrated management so that they can ship more products, said Paul Mason, director of the enterprise systems management program at International Data Corp. in Framingham, Mass.

"They can adapt quicker and easier than users can," Mason said.

McAfee, in Santa Clara, Calif., launched McAfee Enterprise (ME), which blends 10 tools on one Windows NT console with links to major Unix-based network management platforms.

ME includes a set of security tools that centrally manage firewalls, encryption, authentication and virus protection. Security functions integrate with the suite's network and systems management modules. ME costs $125 per node for a 1,000-node license and is available now.

Seagate's Network and Systems Management Group in Cupertino, Calif., meanwhile, is plotting a road map for integrating its Windows and Unix tools in one suite.

The Seagate Desktop Management Suite will add a storage management module when Version 2.5 ships next month. It will add software metering in Version 3.0 in December. The basic suite starts at $1,495 for 50 nodes. Seagate is porting Unix-based tools to NT and will add them to the suite later this year. Those include AppControl, an application performance monitor, and NerveCenter, an event-correlation engine.

Bank

CONTINUED FROM PAGE 65

rate phone and data networks.

Compared with the former LAN, the new network's speed has been "tremendous" and has contributed to shorter customer waits for teller transactions, said Fred Demarzo, data processing manager at the bank. "The average transaction used to take five to 10 seconds," he said. "Now it's a second to two seconds."

Systems management

Customer account reports can also be called up in seconds, compared with the previous half-minute wait, he said. Lantagne said the company chose NeVaDa partly because ISDN was unavailable in its area at the time, partly because bank officials were unsure about the benefits and cost of frame relay and partly because bank officials questioned whether a T1 line could handle the bulk of their imaging needs.

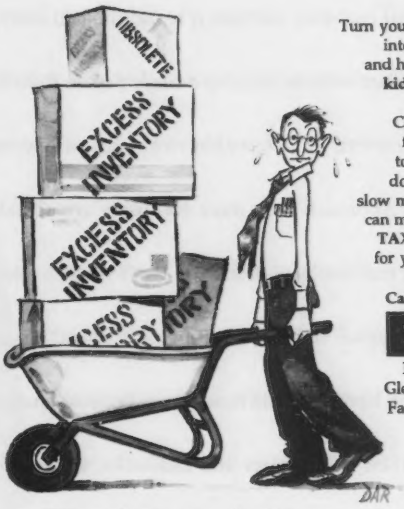
The bank handles the imaging of about 8,000 statements a month, with an average of 25 checks per statement, all stored on a Unisys Corp. mainframe.

The bank, a beta site for Mitel, plans to use imaging to track loans and other transactions. Imaging technology offers customers pictures of checks processed by the bank, which are stored on the bank's mainframe.

Tellers aren't connected to the NeVaDa system, but they benefit from the bank's new wide-area network that connects them to a server. The bank's five Vermont branches use an Ethernet connection to access check-imaging information and compare customer signatures with signatures stored on the computer in the bank's operations center. Lantagne said merging the data and voice systems made sense because the bank could eliminate wiring redundancies. ATM also provides unlimited capacity for future bandwidth needs, he said. Compromised voice quality is a common concern when merging voice and data, but Lantagne said he hasn't noticed any change.

The bank invested about $180,000 to build the WAN, but as a beta tester, it didn't pay the full price Mitel would have charged other customers.

Lantagne said he expects to save little money initially on the voice system because the bank paid for several new features, including improved internal speed dial, more lines and voice mail.



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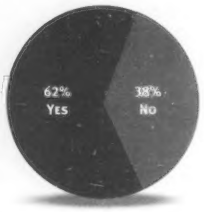

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One of the latest NetWare upgrade utilities — Network Integrity's LANtegrity — was on display at Networld/Interop '96 held here last week. LANtegrity is a hot standby server product that lets businesses upgrade from NetWare 3.x to NetWare 4.1 without disrupting network operations, according to Paula Berman, a product marketing manager at Network Integrity.

Josh Turiel, director of information services at Ad Life Marketing, Inc. in Norwood, Mass., said LANtegrity has some obvious appeal. "Anything that lets me do network maintenance or perform upgrades without downtime sounds great. Traditionally, network administrators like myself have been forced to perform network diagnostic tests and upgrades late at night. The software will give me a lot more flexibility and get me home at a decent hour. And my end users get to stay productive," Turiel said. Turiel has tested LANtegrity, but Ad Life hasn't purchased the product yet.

LANtegrity is different from other products such as Preferred Systems, Inc.'s DS Standard, which is geared toward migrating user information into a directory that puts upgrades online. Novell's SFT III server mirroring product is similar to LANtegrity, "but it's more costly and time-consuming," said Eric Hindin, an analyst at The Yankee Group, a consultancy in Boston.

To upgrade from NetWare 3.x, the network administrator disconnects the NetWare server from the network, and the LANtegrity server takes over within 15 seconds. No reboot is necessary. This pleases customers such as Matt Rice, a senior network manager at U.S. Trust Corp. in Boston. U.S. Trust plans to install LANtegrity in the next few months. "It will save me time and ensure that if I make a mistake, I don't lose any data and won't have to spend time replicating any lost data," Rice said.

Users connect to the LANtegrity server as if it were their NetWare 3.x or 4.1 server, and they can access the files, data, network printers and desktop applications they used previously. LANtegrity is shipping now.

Backing up NetWare

LANtegrity
Availability: now
Price: $4,950 for a 100-user license

FEATURES INCLUDE:

- It can take over as the backup server within 15 seconds
- One LANtegrity server can support up to 1,000 users
- It gives users an identical NetWare security and file system
- No server reboot is necessary
- No downtime
- A built-in On-line Data Vault archives the contents of the NetWare server, which ensures that no data is lost

Nothing but net

CONTINUED FROM PAGE 65

Mountain View, Calif. vendor shifted the emphasis from a product focus to entertainment. Sun invited reporters, analysts and customers to a concert by Little Richard. After a long, hard day on the show floor, people want to dump their million-pound bags of product literature and relax.

Honorable mention

A column on vendor marketing tactics wouldn't be complete without mention of Nortel's famous Evergreen effort. Nortel, formerly Northern Telecom, for years drilled into people's heads that its telephone systems lasted forever — and hence were like evergreens. To set up one large announcement, Northern sent out Bonsai trees. The effort was a hit; the announcement was made during the holiday season, and many reporters found the trees suitable for re-gifting. Kudos.

Living on the edge

The Top 3 signs that it's time for a vacation: 3) You have a hard time finding your car in the company parking lot. 2) You are talking to your voice-mail messages. 1) You point the little security system box on your car key ring at your PC to start it up.

GroupWise Web features get kudos

By Sari Kalin

Novell, Inc.'s plan to bring the document management capabilities of its GroupWise electronic-mail package to the Web has earned early praise from some observers.

Novell gave a sneak preview of its World Wide Web publishing initiative recently at a party to celebrate the release of GroupWise 5. The Web document management feature, code-named the Jefferson Project, will be available in the first quarter next year.

Using Jefferson, documents stored in a GroupWise library will be dynamically presented as a Web document when a user asks to view them. Users can request documents by doing a full-text search or by asking for a specific uniform resource locator.

E-mail

The author of a document can decide whether it should be published to an intranet or the Internet. E-mail administrators can also decide whether any documents in a particular library should be published. GroupWise's Web Access feature already offers password-protected Web-based access to GroupWise mailboxes and documents.

GroupWise users reacted favorably to the brief Jefferson demonstration, saying document management over the Web would make GroupWise more useful to companies that are building intranets.

"We are just putting together our intranet now, and Jefferson offers lots of possibilities for us," said John Ellis, a senior systems engineer at GKM in Wolverhampton, England, and chairman of Novell's GroupWare User Group in the U.K. "It seems to give us lots better control and ease of publishing."

Lotus Development Corp.'s Domino, a Notes-based Internet application server that competes with GroupWise, publishes only Notes documents to the Web, said Stewart Nelson, vice president and general manager of Novell's groupware division.

GroupWise will be able to publish documents created in other applications to the Web, Nelson said. "Notes just keeps Notes documents," said Linda Myers-Tierney at International Data Corp. in Framingham, Mass. "The reality is, people are using a ton of different document applications."

Kalin writes for the IDG News Service's Boston bureau.

Briefs

Jitter debugger

Tinwald Networking Technologies, Inc. in Mississauga, Ontario, has good news for those who manage Token Ring networks, which are prone to distortion called jitter. Enhancements to LinkView 2000, Windows-based LAN analyzer software, help identify errors caused by jitter and measure the LAN's tolerance. The kit costs $9,995 and includes Token Ring adapter, hardware and cable testers.

Aid for enterprise

Molloy Group, Inc. in Parsippany, N.J., is improving the connectivity features in its Top of Mind help desk software. Version 5.0, due this fall, supports Microsoft Corp.'s telephony interface and Systems Management Server and Hewlett-Packard Co.'s OpenView for Windows. It has an application programming interface for linking other tools, smarter call-escalation software and an interface via the World Wide Web.

Seagate

CONTINUED FROM PAGE 65

service center.

"In the future, consolidated tools should make our staff more productive and reduce its size through streamlining and automating management tasks," Woloch said.

Woloch views the new McAfee suite not as "a silver bullet" but as a balanced set of SQL-based tools that complements others used at the school and hospital.

Suite mentality

Vendors are trying to make users see the value of integrated management so that they can ship more products, said Paul Mason, director of the enterprise systems management program at International Data Corp. in Framingham, Mass.

"They can adapt quicker and easier than users can," Mason said.

McAfee, in Santa Clara, Calif., launched McAfee Enterprise (ME), which blends 10 tools on one Windows NT console with links to major Unix-based network management platforms.

ME includes a set of security tools that centrally manage firewalls, encryption, authentication and virus protection. Security functions integrate with the suite's network and systems management modules. ME costs $125 per node for a 1,000-node license and is available now.

Seagate's Network and Systems Management Group in Cupertino, Calif., meanwhile, is plotting a road map for integrating its Windows and Unix tools in one suite.

The Seagate Desktop Management Suite will add a storage management module when Version 2.5 ships next month. It will add software metering in Version 3.0 in December. The basic suite starts at $1,495 for 50 nodes. Seagate is porting Unix-based tools to NT and will add them to the suite later this year. Those include AppControl, an application performance monitor, and NerveCenter, an event-correlation engine.

Bank

CONTINUED FROM PAGE 65

rate phone and data networks.

Compared with the former LAN, the new network's speed has been "tremendous" and has contributed to shorter customer waits for teller transactions, said Fred Demarzo, data processing manager at the bank. "The average transaction used to take five to 10 seconds," he said. "Now it's a second to two seconds."

Systems management

Customer account reports can also be called up in seconds, compared with the previous half-minute wait, he said. Lantagne said the company chose NeVaDa partly because ISDN was unavailable in its area at the time, partly because bank officials were unsure about the benefits and cost of frame relay and partly because bank officials questioned whether a T1 line could handle the bulk of their imaging needs.

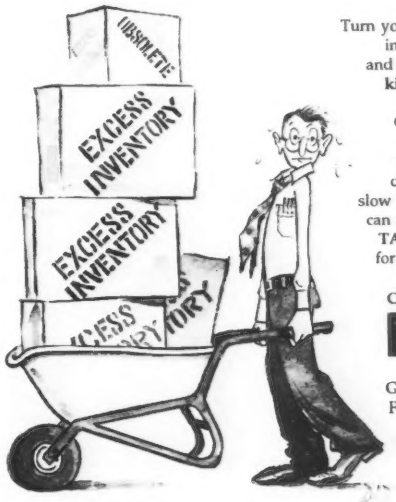
The bank handles the imaging of about 8,000 statements a month, with an average of 25 checks per statement, all stored on a Unisys Corp. mainframe.

The bank, a beta site for Mitel, plans to use imaging to track loans and other transactions. Imaging technology offers customers pictures of checks processed by the bank, which are stored on the bank's mainframe.

Tellers aren't connected to the NeVaDa system, but they benefit from the bank's new wide-area network that connects them to a server. The bank's five Vermont branches use an Ethernet connection to access check-imaging information and compare customer signatures with signatures stored on the computer in the bank's operations center. Lantagne said merging the data and voice systems made sense because the bank could eliminate wiring redundancies. ATM also provides unlimited capacity for future bandwidth needs, he said. Compromised voice quality is a common concern when merging voice and data, but Lantagne said he hasn't noticed any change.

The bank invested about $180,000 to build the WAN, but as a beta tester, it didn't pay the full price Mitel would have charged other customers.

Lantagne said he expects to save little money initially on the voice system because the bank paid for several new features, including improved internal speed dial, more lines and voice mail.



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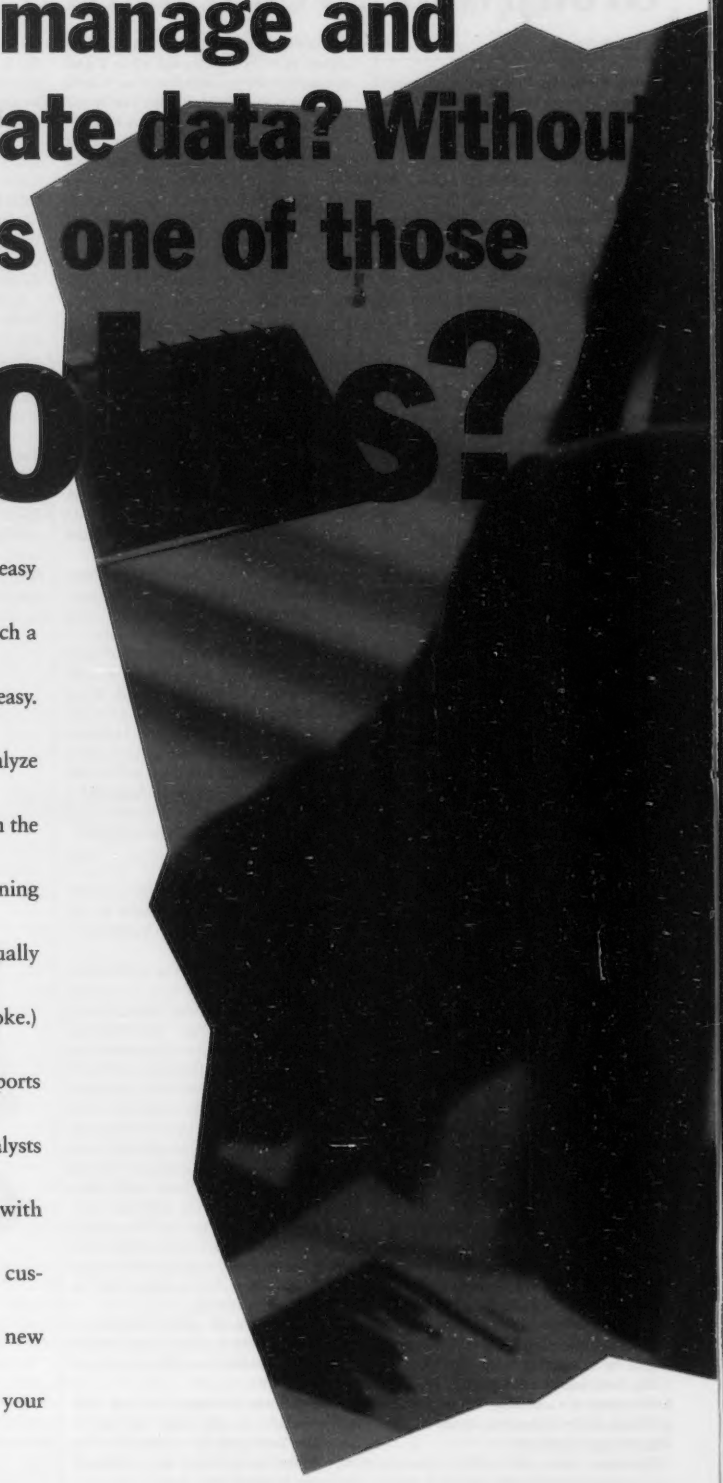
End users will manage and analyze corporate data? Without my help? Is this one of those MIS jokes?



Funny how no one thinks a database can be both easy to learn and powerful. But Lotus Approach is just such a database. Powerful. Accessible. And most importantly, easy. So easy that end users can query, report on, and analyze corporate data without tying up a single person from the MIS department. In fact, within two hours of opening the Lotus Approach box, most end users are actually producing real results with it. (And that's no MIS joke.)

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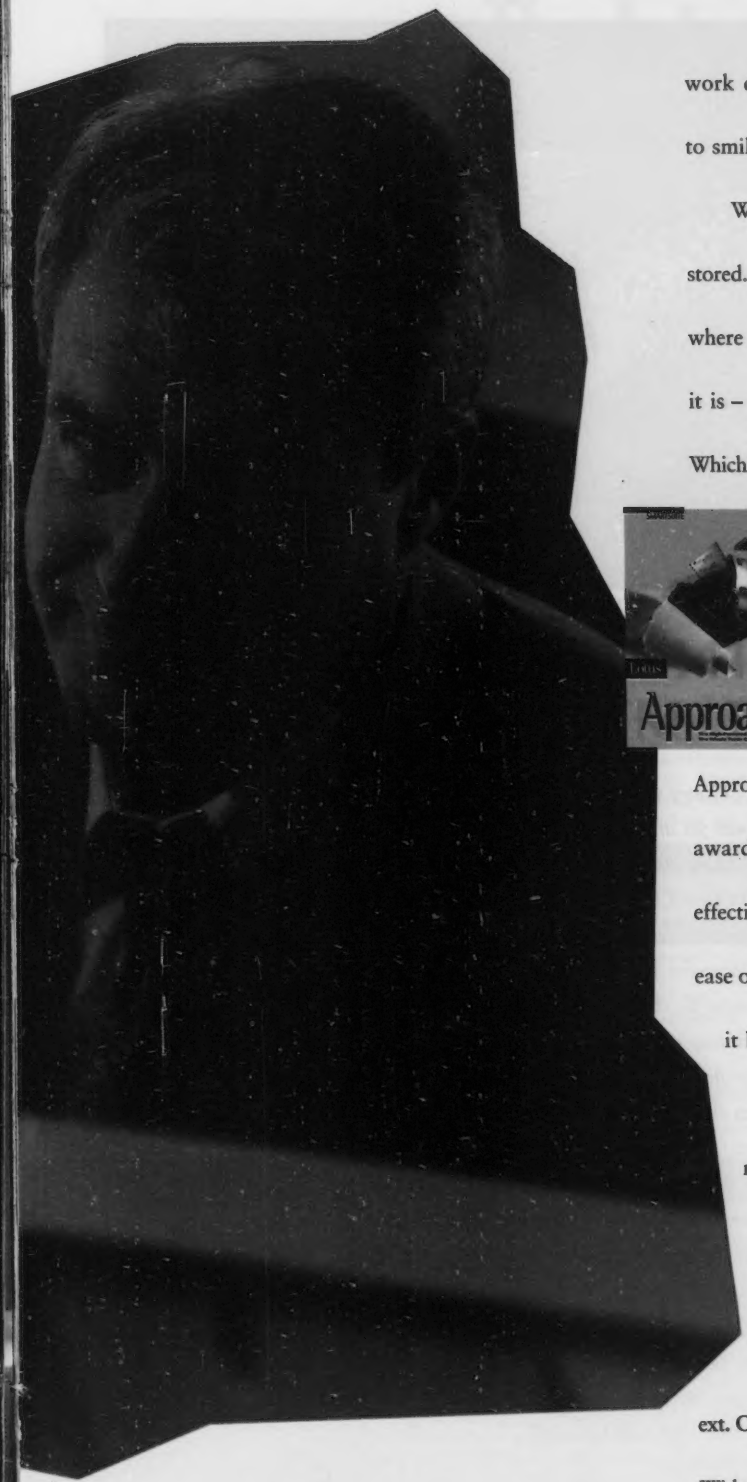

work done instead of theirs. Now there's something to smile about.

With Approach, it doesn't matter where your data is stored. In DB2,® Oracle,® Sybase,® dBASE, or almost anywhere else. Users can join related data as it is, and where it is – even if it's stored in different database systems. Which means that users never need to copy or convert data into yet another database format just to build reports and analyses.

Further proof that Lotus Approach is the right choice for your users: Lotus Approach 96 just won PC Magazine's "Editors' Choice" award, prompting one reviewer to say, "If there's an effective database product that surpasses all others in ease of use, it's Lotus Approach." We couldn't have said it better ourselves.

There's a lot more Lotus Approach can do, which means there's a lot more time for you to do what you'd rather do. To find out more about Lotus Approach 96, or if you're a DB2 user looking to "Extend the Power of DB2," call 1-800-TRADE UP, ext. C219. Or visit us on the World Wide Web at www.lotus.com.

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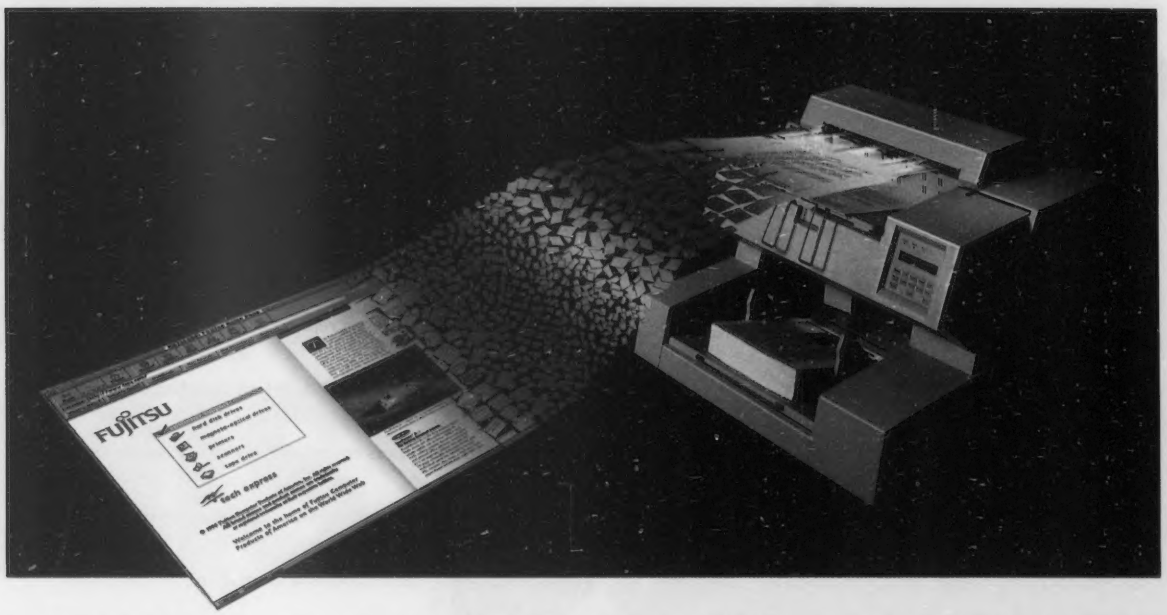

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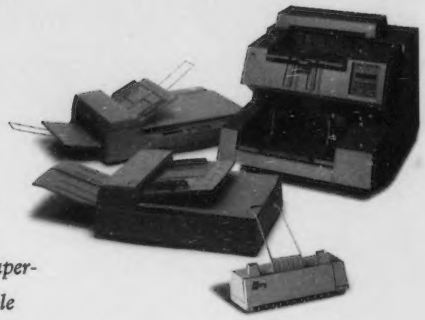

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Prosecution of CNet hackers considered, 72

The Internet

Vendors warm up new clients pitch

More choices complicate support

By Tim Ouellette

Get out your catcher's mitts.

By early next year, electronic-mail and groupware vendors will be pitching a barrage of clients that access their server products in different ways (see chart, page 72).

The variety of clients gives users more choice than ever over what they see on screen. But such a mix of different clients in one organization can also place a huge installation, management and tracking burden on information systems staff.

E-mail

The new breed of clients targeted at specific types of users is seen as a way to find a middle ground between traditional proprietary client software and less functional but lightweight World Wide Web browsers.

Web access

Lotus Development Corp. and Novell, Inc. let users access their products from Web browsers, and Microsoft Corp. and Hewlett-Packard Co. have plans to do the same by year's end.

The new clients could create hardware upgrade and training issues on top of the software upgrade for some users.

For example, Microsoft has plans for a completely new client upgrade to Exchange — only five months after Exchange shipped. Called Outlook, the 32-bit software is chock-full of personal information manager-type features, can handle group scheduling and E-mail, and provides additional features. Those features include automatically journalizing work in progress, background spell checking while typing, message recalls and support for Visual Basic applications.

"This should have been announced and implemented previously," said David Ferris, president of Ferris Research in San Francisco, in a recent report. "The effect will be confusion and delays in new Exchange deployments."

"One of my concerns is [Outlook] is extremely flexible, maybe even more than you need," said Todd Carlson, chief information officer at Electronic Data Systems Corp. in Dallas. "Our intent is that we will put a Web front end on our existing systems as a consistent way for users to do their processes and access information."

Microsoft alleviated some Outlook upgrade concerns re-

E-mail, *page 72*

Plug-in pain

IS learns to cope as browser add-ons permeate systems

By Kim S. Nash

You may not know it from the hype, but World Wide Web browsers can't do it all.

Hence a market has emerged for add-on packages — plug-ins in Web parlance — that do things Netscape Communications Corp.'s Navigator or Microsoft Corp.'s Internet Explorer can't.

But tracking all the plug-ins users happily download on their own and often for free can get IS undies in a bunch.

With more than 100 Netscape plug-ins from dozens of vendors and a growing number of add-ons for Microsoft's browser that are built in the ActiveX language, monitoring which users have what add-ons can be a headache. Plus plug-ins aren't inconsequential; they require real disk space and memory that information systems workers must supply and manage.

"The plug-in situation is hopelessly mixed up," said John Kizer, head of computer operations at Gungnir Research, Inc., a biotechnology company in Portsmouth, Ohio.

Not only must IS know which version of a particular package works with each version of Navigator or Explorer, but both kinds of software "appear in new versions so often it's hard to keep track," Kizer said.

Also irksome is the fact that different Web developers tailor Web pages to different technologies, users said.

For example, add-on modules for Explorer are built mainly in ActiveX. Although Explorer can run some plug-ins built for rival Navigator, Netscape has so far refused to support ActiveX.

So what looks OK to an Explorer user may not work the same way for someone viewing

Plug-in pain, *page 72*

Plugging Navigator's holes

A sampling of the 100-plus plug-in applications that perform functions Netscape's browser can't do alone:

Company	URL	Product	Description
Now Software	www.nowsoft.com	**AboutTime**	Calendaring and scheduling
Alpha Software	www.alphasoftware.com	**Concerto**	Data entry
Visual Components	www.visualcomp.com/	**Formula One/Net**	Excel-compatible spreadsheet
IChat	www.ichat.com/	**IChat**	Interactive chat
Visioneer	www.visioneer.com/	**PaperPort Vx**	Internet faxing

http.

Search engines

The World Wide Web is more cluttered than a second grader's bedroom. Search engines that catalog the Web make finding information easier, but you have to know which is appropriate for a specific search. That's where we come in:

Yahoo (www.yahoo.com) is the grand old lady of Internet search engines. It presents a hierarchical catalog of sites on the Web, organized like your neighborhood Yellow Pages. It's good for finding a whole lot of similar sites. But it's by no means complete, and sometimes companies are filed under the wrong category. Yahoo is also your best bet if you're looking to find the Web page of a specific company – do a search on *Computerworld*, and we'll pop right up, whereas other search engines will give you every page where *Computerworld* is mentioned.

AltaVista (www.altavista.digital.com/) from Digital Equipment Corp. goes further in depth than Yahoo. Where Yahoo just searches page titles and key words, AltaVista searches all the text on millions of Web pages. AltaVista's strength is that it will give you a great many pages about a specific subject. Its weakness is that it doesn't sort pages in order of relevance, which means you get a lot of tangential stuff. And it's sometimes out of date, going months at a time between updates.

Like AltaVista, **InfoSeek Ultra (ultra.infoseek.com/)**, from InfoSeek Corp. searches all the words on all the pages it knows about. But it prioritizes the sites it finds according to relevancy, reducing the mass of pages users may have to wade through. The weeks-old service may turn out to be in all ways better than AltaVista – if the company keeps the site up to date on changes to pages on the Web.

Of course, the big liability to using a single search engine is that each one knows only about part of the Web, not all of it. **Cyber411 (cyber411.com)**, from Cyber Networks, Inc., solves that problem by searching the search engines – 15 of them – and listing the results, eliminating duplicates of sites that turn up on more than one search engine. However, like AltaVista, you get an awful lot of extraneous material when you do your search.

– *Mitch Wagner*

Commentary

Criminal action?

Mitch Wagner

The recent break-in of computer systems by journalists at CNet demonstrates that Will Rogers was right: It's not the things you don't know that get you in trouble; it's the things you know that just aren't so.

An enterprising reporter and a member of the technical staff at the online news service together managed to break in to two commercial sites on the World Wide Web. At one site, the online bookstore BookSite (booksite.com), they scored a coup: a list of credit-card numbers of people who'd ordered merchandise there.

The incident underscores a basic principle of computer security: The biggest threat doesn't come from holes in fancy, emerging technology. The biggest threat comes from failing to pay attention to security principles that have been known for years.

Security failures

IS managers today are often like people who buy fancy alarm systems for their houses, then fail to lock the doors and windows.

They fail to set access permissions correctly; they fail to install software patches released by vendors to correct known security threats; they fail to make sure their users have hard-to-break passwords.

In the case of the CNet break-ins, the problem was with access permissions. The sites broken in to — BookSite and *Upside* magazine — used a database product that allows users to launch queries directly from the "Location" line in a Web browser. The webmasters were supposed to configure their Web sites so only non-confidential information was visible from the Web. They neglected to do so. Whoops.

Fortunately, the only bad outcome for BookSite and *Upside* was some embarrassing news coverage about the security holes.

But this may not be the end of the story for the journalists at CNet.

As I type this, the proprietor of BookSite is pondering whether to call the cops on the CNet staffers involved in the escapade.

I sure hope he doesn't. I spoke with one of the CNet staffers involved, and he seemed motivated by the excitement of chasing down a good story, not by any criminal intentions. There's certainly no evidence that the CNet staffers sought to profit from possession of the ill-gotten credit-card numbers.

The law is the law

But intentions don't matter for much. It's wrong to break in to people's systems — even if you're doing so just to prove a point.

Ironically, the CNet staffers' predicament illustrates another basic principle: Good defenses are necessary, but good security also requires detection of penetration and prosecution of intruders.

There's even a little three-word mantra that security experts use to illustrate the principle: "Prevention. Detection. Enforcement."

I imagine the manager of BookSite is finding it awfully hard to resist temptation to assist the reporters with a little follow-up research. "OK," he'd say. "You wrote pretty well about the prevention part of the incident. As to detection, well, we know who you are.

"Here's a couple of men in blue to discuss enforcement for your follow-up story."

Wagner is *Computerworld*'s senior editor of the Internet.

Document management better when Web-enabled

By April Jacobs

Intranets and document management technology are a natural pair, but justifying the cost and effort of those systems may be holding the duo back, analysts said.

Tom Koulopoulos, president of Delphi Consulting Group, Inc. in Boston, said although intranets are being installed in many companies and document management is becoming more pervasive, the two aren't being tied together at the same rate.

Delphi surveyed more than 120 information systems professionals at a recent conference and found that 70% had intranets and 50% were implementing workflow or document management systems. But only 10% had hitched them together.

Koulopoulos said a major reason may be cost. Although intranets are inexpensive, document management and workflow systems can cost millions and require a strong business case.

But the benefits of combining the two can be enormous, he said.

For example, when a company Web-enables its document management system, users with a standard World Wide Web browser can gain access to documentation and information they may need to review or change — anytime, anywhere.

Better customer service

Organizations can also open up documents for the public to view while protecting the information in a secure environment, Koulopoulos said.

The Library of Congress in Washington is one example of how document management can improve customer service.

Basil Manns, senior physical scientist at the library's preservation directorate, said the library is in the final stages of choosing a vendor to scan about 5 million pages of literature and images — from plays and short stories to illustrations — and offer them to the public via the Web.

"We're going to open up collections not generally accessible because of their rare condition or critical shape," Manns said.

He said the estimated cost of the project is about $2 million.

An IS manager at a large Texas bank said his firm has already implemented a corporate intranet and a document management system and will link the two soon.

"In general, the Web is ideal for doing form management," said the manager, who requested anonymity. "It is a marriage that's going to happen."

E-mail

CONTINUED FROM PAGE 71

cently when it pledged to ship Outlook free with the Exchange 4.5 upgrade. Lotus had no comment about its progress on plans announced this summer to develop a Web client called the Mobile Web Information Manager.

One organization focusing on Web browser access is the court system for the state of Missouri. The state's courts chose Notes for E-mail and groupware because its 20,000 Missouri bar members and 2,000 court employees could access Notes databases from any popular Web browser. Users who want more features run the Notes client.

For users who want to stay away from new clients or Web browsers altogether, those vendors pledge to support common protocols and interfaces, including the Internet Post Office Protocol and Lightweight Directory Access Protocol (LDAP) or Microsoft's Messaging Application Programming Interface (MAPI).

In theory, that allows a Notes client that supports MAPI to access E-mail on an Exchange Server, for example. And an Exchange client that supports LDAP would be able to access directory information located on a GroupWise server.

Client potpourri

E-mail and groupware vendors plan to let users access their server products using Web browsers. But there are more clients in the offering:

Vendor	Client/Availability	Description
Lotus	Mobile Web Information Manager/1997	Feature-rich Web client
	Interactive Application Designer/1997	Web development tool
Microsoft	Outlook/ late 1996	Full featured, 32-bit E-mail and desktop manager
	Internet Mail and News/ shipping	Free E-mail and news reader
Novell	GroupWise 5/ late October	Universal in-box for E-mail, groupware, document management and workflow

Plug-in pain

CONTINUED FROM PAGE 71

a site through Navigator.

IS can alleviate plug-in pain by keeping a list of which modules seem to be incompatible with in-house software, said Mellanie Hills, president of Knowledgies, Inc., a Web consulting firm in Plano, Texas.

"IS should be out in front of the users [in] evaluating plug-ins," Hills said. Posting to the intranet a list of potential problems with the add-on modules can also help users bypass trouble, she added.

Different philosophy

Other IS managers aren't concerned about plug-in proliferation.

The IS philosophy at Boston Scientific Corp. is that "end users shouldn't have to be asking IS for this or that to do their jobs," said Geoffrey Teekema, groupware project manager at the medical device manufacturer in Natick, Mass.

Add-on Web software "isn't something that has to be controlled. If users want to use them, that's fine with us," Teekema said.

Words from the wise

John Kizer, head of IS at biotech company Gungnir Research, offers advice on plug-in management:

- Keep only one copy of a browser on each PC to prevent plug-ins from being downloaded into wrong directories.
- Set update days when end users log on to the Internet to check that plug-ins are current.
- Limit the number of plug-ins users can have.

New Products

Andover Advanced Technologies, Inc. has introduced VideoCraft 3.6, a new version of a video special effects package that has World Wide Web capabilities.

According to the Acton, Mass., company, the new features include an 89A animation graphics interchange format (GIF). Most popular Web browsers support GIF animations, which can also be incorporated in Java scripts.

VideoCraft 3.6 costs $199.95.

▶ *Andover Advanced Technologies*
(508) 635-5300

Optimal Networks has announced Optimal Internet Monitor Version 1.1, which has enhancements for World Wide Web report publishing.

According to the Palo Alto, Calif., company, Version 1.1 provides Windows NT 4.0 compatibility, Internet Protocol port learning and address identification and multibrowser support.

Optimal Internet Monitor Version 1.1 costs $1,500.

▶ *Optimal Networks*
(415) 845-6333
www.optimal.com

Adobe Systems, Inc. has announced Adobe PageMaker Version 6.5 for Macintosh, Power Macintosh, Windows 95 and Windows NT 4.0 Workstation to expand document-creation features for print and the Internet.

The Mountain View, Calif., company said Version 6.5 adds documentwide layers, automatic layout adjustment and hyperlinking for making documents.

Adobe PageMaker Version 6.5 costs $895 or $99 as an upgrade from any version of PageMaker.

▶ *Adobe Systems*
(415) 961-4400
www.adobe.com

Acacia Networks has announced NovaWeb, a World Wide Web application that lets network managers configure and troubleshoot networks from anywhere via a standard Web browser.

According to the Wilmington, Mass., company, NovaWeb uses a graphical user interface that displays an interactive image of a switch that features a point-and-click function for network management.

NovaWeb costs $295.

▶ *Acacia Networks*
(617) 937-1784
www.acacianet.com

InterSystems Corp. has announced Open M/WebLink, software to provide a link between the World Wide Web and most M databases.

The Cambridge, Mass., firm said Open M/Weblink eliminates the need to build complex common gateway interface scripts. This reduces the time needed to deliver production-quality Web applications.

Open M/WebLink is free for a single-connection license from the InterSystems Web site; multiple connection licenses cost $100 per connection.

▶ *InterSystems*
(617) 621-0600
www.intersys.com

Reality Online, Inc. has announced Reuters Inc.Link, a service to enable public companies to distribute financial information on the World Wide Web.

According to the Norristown, Pa., firm, Reuters Inc.Link allows direct and immediate access to the latest financial information about public companies — including stock quotes, company financial statistics and performance graphs — using Reuters data.

A Reuters Inc.Link membership starts at $1,000 for setup and $500 per month for maintenance.

▶ *Reality Online*
(610) 650-8600
www.moneynet.com

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Retailer's warehouse management system cuts operating costs, **80**

Corporate Strategies

Don't always trust 'net info

Security managers offer 'net warnings

By Matt Hamblen

If your mother says she loves you, check it out. — Sign hanging on the wall above reporters' desks at the City News Bureau of Chicago.

It became something of an urban legend: Somebody was tranquilizing wild gorillas and then dressing them in clown outfits. At least that was the story being told at various sites on the World Wide Web.

To show that people shouldn't trust everything they read on the Internet, a producer at CBS Radio called an animal preservation group in July and discovered the story was a joke.

Common sense says don't trust anything on the Internet without first checking it out. But it isn't always easy to figure out how to do that.

Many users have clear procedures for protecting against viruses, but policies aren't as refined about when to trust content. As Internet usage explodes in corporate settings, the challenge for information systems personnel is to determine how to impart their own Internet skepticism to new users.

Sprint's Robert Reese: *Checking accuracy is 'common sense'*

Guidance needed

David Devcich, IS manager at Beveridge & Diamond, a group of 200 lawyers in Washington, said his firm is drafting an Internet usage policy that will govern many areas, including piracy of copyrighted works and when not to trust content. "If there aren't guidelines, it could be a real blow to the company," he said.

"I'd be reluctant to take something off the Internet unless I know the site. If a Web site is CNN, I'm more inclined to trust the information," Devcich said. "But if a site's not well-known, a company librarian can help" verify facts, he said.

Robert Reese, IS and network security manager at Sprint Corp. in Kansas City, Mo., said he tells users that checking the reliability of what is on the Internet is mostly common sense. "It's wise to remember the words, 'Buyer beware.' You get what you pay for."

The best way to verify Internet information is to ask, " 'Do you know the source?' " Reese said.

Sprint employees can learn about Internet pitfalls through in-house courses, and a company Internet policy is in the works, a spokesman said.

About 80,000 machines are connected to the Internet at Lockheed Martin Missile and Space, and usage policies are distributed via the company's intranet, a spokeswoman said. IS personnel in each department can monitor some activities, but there isn't much supervision

'net info, *page 85*

Verifying Internet information:

- Teach users to be skeptical: **Let the buyer beware**
- Tell users information from a **trusted source** at a Web site is more reliable than generic information
- Be aware that **unsolicited information** is probably untrustworthy
- Use the adage: **"When in doubt, check it out"**
- Get your company to develop a written policy instructing users to **verify information received over the Internet**

Applications architects ride to the rescue of development fiascos

By Julia King

Under the gun to deliver new and better applications fast, client/server developers have paid scant attention to how to manage systems once they are in production.

Too often, the upshot has been applications meltdown, which can cost a company millions of dollars in lost business and the goodwill of its customers. America Online's 27-hour system outage is one of the more notable examples.

Application management

Overall, failed application development projects cost U.S. companies about $80 billion per year. Cost overruns add up to another $59 billion annually, according to The Standish Group International, Inc. in Dennis, Mass.

To get a grip on this chaos, some companies are beginning to hire a new breed of information systems professionals called applications architects. They are often high-level, technology-savvy managers whose primary job is to ensure that all new applications comply with an overall systems blueprint.

"People are building systems without thinking about the consequences and about how systems will be used and integrated over time," said Judith Hurwitz, president of Hurwitz Group, Inc., a consulting firm in Newton, Mass.

Adding fuel to the fire are hastily assembled Internet and intranet applications and a steady hike in the variety of technologies businesses choose to employ.

By next year, companies will have increased their average number of operating systems, database management systems and other major computing components by 30%, setting off an exponential increase in overall system complexity (see chart).

The applications architect title already has begun to surface at a handful of companies, including Tasc, Inc., a $450 million systems engineering firm and government contractor in Reading, Mass.

"It's really a kind of visioning position" that focuses on the current technology landscape and how applications will work as that landscape changes, said Thomas Gallacher, manager of IS at Tasc.

For example, "The architect is the first person to evaluate new tools on the basis of how they fit into the overall organization," he said.

Outsourcing work

Other IS groups, such as the one at Babson College in Wellesley, Mass., have farmed out new applications development to contractors, freeing in-house IS staff to focus on integrating and managing the applications.

"Application manageability is becoming a huge issue," said Richard Mickool, director of Babson's information technology and services division.

"Part of our frustration was that we were relying on vendors and vendors' applications to do a lot of the management, but vendors can't address the what-if issues [such as] what impact will changing an ODBC driver in one application have on another application," Mickool said.

As integrators, part of the IS department's job at Babson is to incorporate application management features into new systems. These include ways to track errors in applications and distribute new versions of software to all users at the same time.

"One of the things that killed us with client/server is version control. So with new Internet applications, we build in a layer so we can distribute them over the network," Mickool said.

"At many organizations, the applications aren't ready for prime time. They simply do not operate and are not manageable. We have all of these time bombs out there," Hurwitz said.

Don't have a meltdown

By adding more technology, companies are causing application meltdown

TECHNOLOGY	1995	1996*	1997*
Average number of operating systems installed	10	12	13
Average number of database management systems	8	9	10
Average number of development tools	14	17	19

*Projected

Source: Sentry Market Research, Westboro, Mass.

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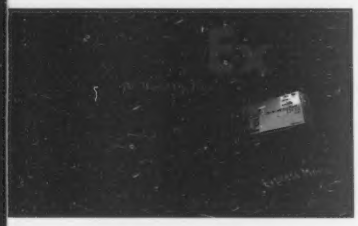

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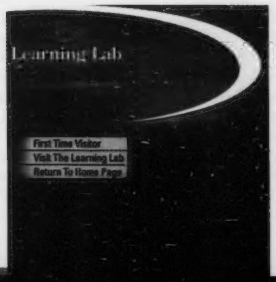

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Retailer takes stock of distribution center

By Thomas Hoffman
MERIDEN, CONN.

Next January, Bob's Stores will flip the switch on a client/server warehouse management system expected to help reduce operating costs by 17% over the next two years.

The savings will come mainly through productivity gains. Bob's can streamline the flow of inbound merchandise by having shipping and receiving information more readily available to managers. For example, by knowing how many cartons of Reebok sneakers will arrive at Dock No. 12 at 2 p.m., receiving managers can more effectively forecast how many workers will be needed to unload the goods.

Two years ago, Bob's was bursting at the seams of the casual clothing it sells. One of several retailing divisions of the closely held Melville Corp. in Rye, N.Y., Bob's was on track to more than triple its revenue to $1 billion by 1998 and double its presence in the Northeast to 40 superstores.

Growing and growing

But like many retailers bitten by the expansion bug in the early 1990s, some of Bob's newer stores didn't take off as quickly as expected. Even though sales grew a healthy 21% last year to $349 million, Bob's overall profit margins have been "marginal," said David A. Poneman, a retailing analyst at Sanford C. Bernstein & Co. in New York.

That helped put the kibosh on a new, high-tech distribution center planned for early next year in nearby Cheshire, Conn. The new facility, put on the block last month, was slated to use high-speed, carton-sorting systems to help Bob's zip through the 31 million annual units of Reebok sneakers and other goods that are channeled to its 36 outlets.

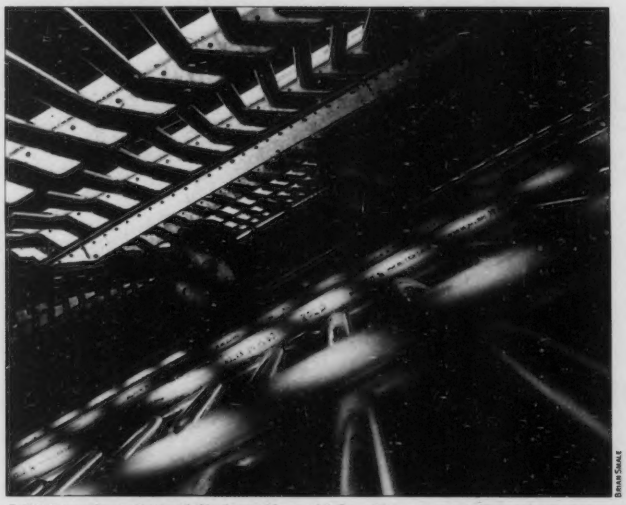
The problem was, Bob's had ordered a warehouse management system from Optum Software in Costa Mesa, Calif., based on the requirements of the Cheshire distribution center. But because the Meriden facility is less sophisticated, the software became "a Mercedes where a Chevy would have done just fine," said Bruce Fetter, vice president of logistics at Bob's.

So Fetter and his staff changed the scope of the project and focused instead on automating the manual-intensive operations at Bob's Meriden facility.

Until recently, merchandising managers had to wait until 3 p.m. before status reports on inbound inventory were entered into a homegrown PC-based system, printed out and delivered to them. When the Optum system goes live in January, merchandisers will be able to check incoming product shipments online on a continuous basis, said Gary Marceau, Bob's warehouse management systems administrator.

That's in line with efforts of leading-edge retailers such as Wal-Mart Stores, Inc. and Kmart Corp., which have pioneered the use of just-in-time inventory replenishment systems to cut overhead and help reorder fast-moving merchandise quickly, said Robert George, an analyst at Advanced Manufacturing Research in Boston.

Fetter placed the cost of the new system, including software, the RS/6000, 25 new PCs, and radio frequency-based handheld scanners in the low "seven-figure" range.



Bob's Stores Bruce Fetter *(left) pictured here with Gary Marceau says new warehouse management software will help Bob's Stores process 100% of its goods in 24 hours vs. the two days it now takes to dispatch 80% of its merchandise*

Briefs

Bank to overhaul system

Dah Sing Bank is overhauling customer service functions in all 43 of its branches across Hong Kong and installing an automated client/server retail banking system.

The banking system will cover the Hong Kong-based bank's frontline functions, such as account opening and loan application functions as well as telephone inquiries.

Each of the bank's branches will house its own LAN and one server running the Chinese version of Microsoft Corp.'s Windows NT Server 3.5, with Chinese NT Workstation 3.5 and Microsoft Office on the clients. Olivetti USA's Mosaic software will run the banking functions on top of Windows NT.

— Computerworld Hong Kong

Online banking not safe

Central banks from 10 nations recently issued a report that concluded that several forms of electronic payment systems, such as smart cards and encrypted credit-card payments over the Internet, aren't completely safe.

The report was issued from governors from central banks, including the **U.S. Federal Reserve**, the **Bank of England**, **Deutsche Bundesbank** and the **Bank of Japan**.

The committee has spent the past 10 months examining how safe it is for consumers to pay for products and services over the Internet or with a smart card. They have met with vendors of electronic commerce security products and conducted studies using the various payment methods, a spokesman for the Federal Reserve Bank said.

The overall conclusion of the report is that "measures exist which would enable the risks inherent in using these [electronic payment] products to be controlled ... however, there is no single security measure or set of measures that can be said to provide a guarantee of complete protection."

— IDG News Service

Airline uses smart cards

When **British Airways** pilots and stewards travel abroad, the company gives them a cash allowance to pay for hotels, meals and necessities. However, the company found that doling out cash in England was very costly and difficult to manage.

Now the company has employed the services of **Card Services International Ltd.** to develop and supply a smart-card-based electronic cash system. Employees will be given a card with electronic cash credits that they can exchange for currency at British Airways booths in airports worldwide.

— IDG News Service

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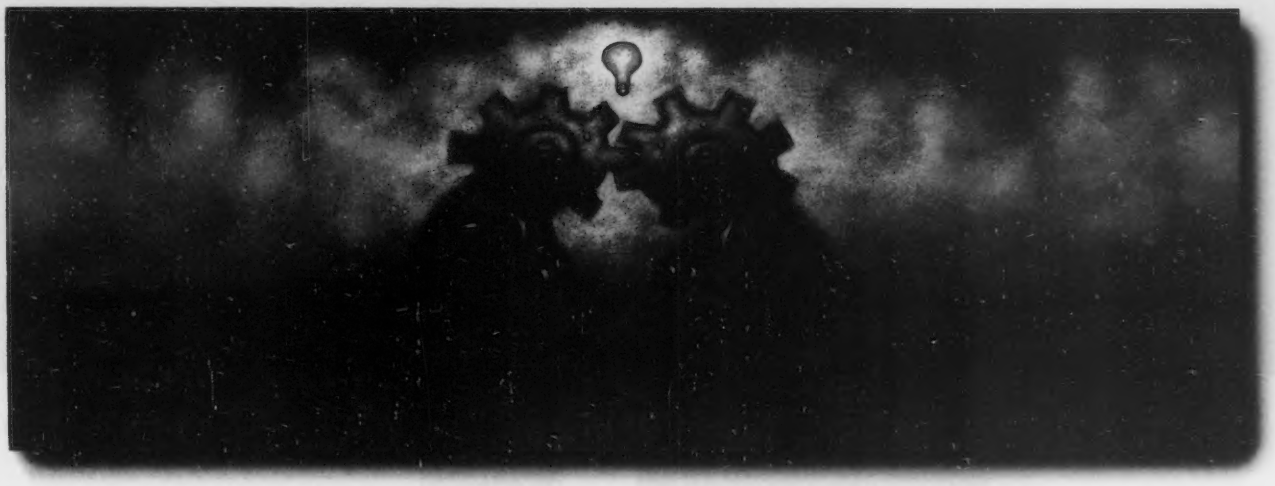

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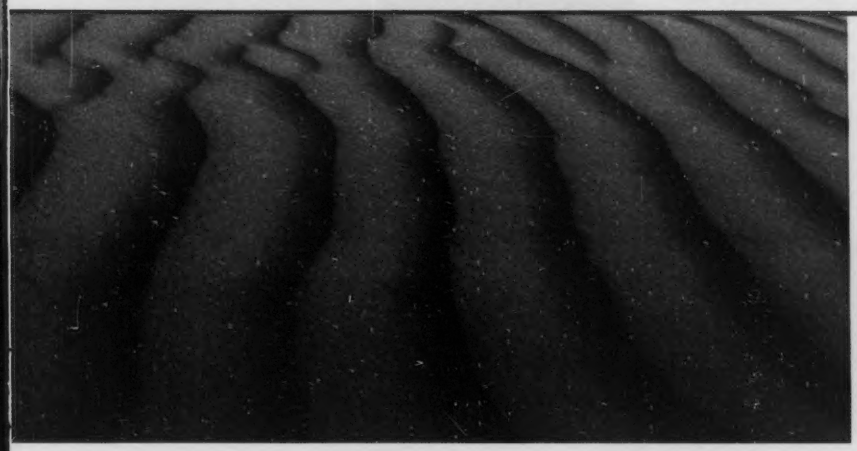

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COMPAQ

Has It Changed Your Life Yet?

Firm grapples with distributed computing

By Bob Francis

The country's largest wholesaler and distributor of office products has found it a fairly easy migration to distributed systems management.

Until recently, the $2.2 billion United Stationers Supply Co. has been anchored to its Amdahl Corp. 530 MIPS mainframe in the company's Des Plaines, Ill., headquarters. But now, United Stationers also relies on the Windows NT-based servers it is installing in about 40 locations — and on the NT version of the mainframe systems management software it had been using.

Server move

The move to servers became necessary because the company switched from being a regional supplier to a national supplier, and it needed to better manage its 40 local distribution centers.

United Stationers plans to continue using the mainframe for order entry, order processing and other financial applications, but it is initially downloading pricing information to the servers at each warehouse. "But other programs will eventually find their way to the PC servers," said Bob Heyduk, manager of production operations at the company.

Heyduk said United Stationers has grown primarily though acquisition. Last year, it purchased a major competitor, Stationers Distribution Corp. in Dallas, which nearly doubled the company's size.

The company plans to integrate those servers' operations closely with its mainframe applications. For one thing, United Stationers wants to "maintain our tight production controls" from the mainframe, Heyduk said.

The company had used Control from New Dimensions Software Ltd. in Irvine, Calif., for its mainframe scheduling, automated operations and tape management. So when United Stationers began testing its new NT servers earlier this year, New Dimensions began beta-testing Windows NT versions of Control.

United Stationers was testing whether it could continue to use the existing systems management product line in the new environment.

"It would mean a real savings in terms of manpower and learning a new system," Heyduk said. Control's mainframe and Windows NT scheduler, automated operations and tape management programs share about 70% of the same code.

Heyduk said he is pleased with the results so far. "It's been relatively easy to migrate from a systems management perspective because the mainframe and the Windows NT versions of Control are so similar," he said.

According to R. Paul Mason, an analyst at International Data Corp. in Framingham, Mass., relying on a familiar product is a good strategy. "That's much easier than someone familiar with a mainframe environment trying to deal with something like Microsoft's [System Management Server]," he said.

Vendors chart path for the consolidation of systems management tools. See page 65.

Briefs

Firm gets year 2000 contract

Keane, Inc., a software services firm in Boston, has been awarded a $150,000 year 2000 compliance contract by **Public Service Company of North Carolina, Inc.** Under the agreement, Keane will conduct an enterprise planning assessment for preparing all the utility's information systems, including mainframe and PC applications.

Unisys wins five-year deal

Unisys Corp.'s Federal Systems division has won a five-year systems integration contract from the **U.S. Defense Information Systems Agency**, with a potential value of $400 million to $500 million.

Start with safety guidelines

Company policies about use of the Internet may not have enough teeth or tend to be ignored, some analysts said.

And even though everyone knows to check downloaded software, it might not always happen with so many users doing what they want.

Chip Gliedman, an analyst at Giga Information Group in Cambridge, Mass., got burned by downloading a beta version of Microsoft Corp.'s Internet Explorer that prevented him from getting in to some sites he wanted. That experience prompted him to start writing guidelines that he hopes other companies will adopt.

Gliedman suggests IS managers meet with top management and the firm's lawyers and trainers.

"Education is key. If you tighten controls too much, the users rebel, and it's a big civil war. Users need to be told it's the company computer," Gliedman said.

Some companies with many users and sensitive data have developed policies that require users to get written permission before downloading software from the internet and then to have it tested for viruses.

— Matt Hamblen

'net info

CONTINUED FROM PAGE 77

of how content is used.

If an important financial statement has faulty information, the results could be disastrous for an investor or a company relying on that data.

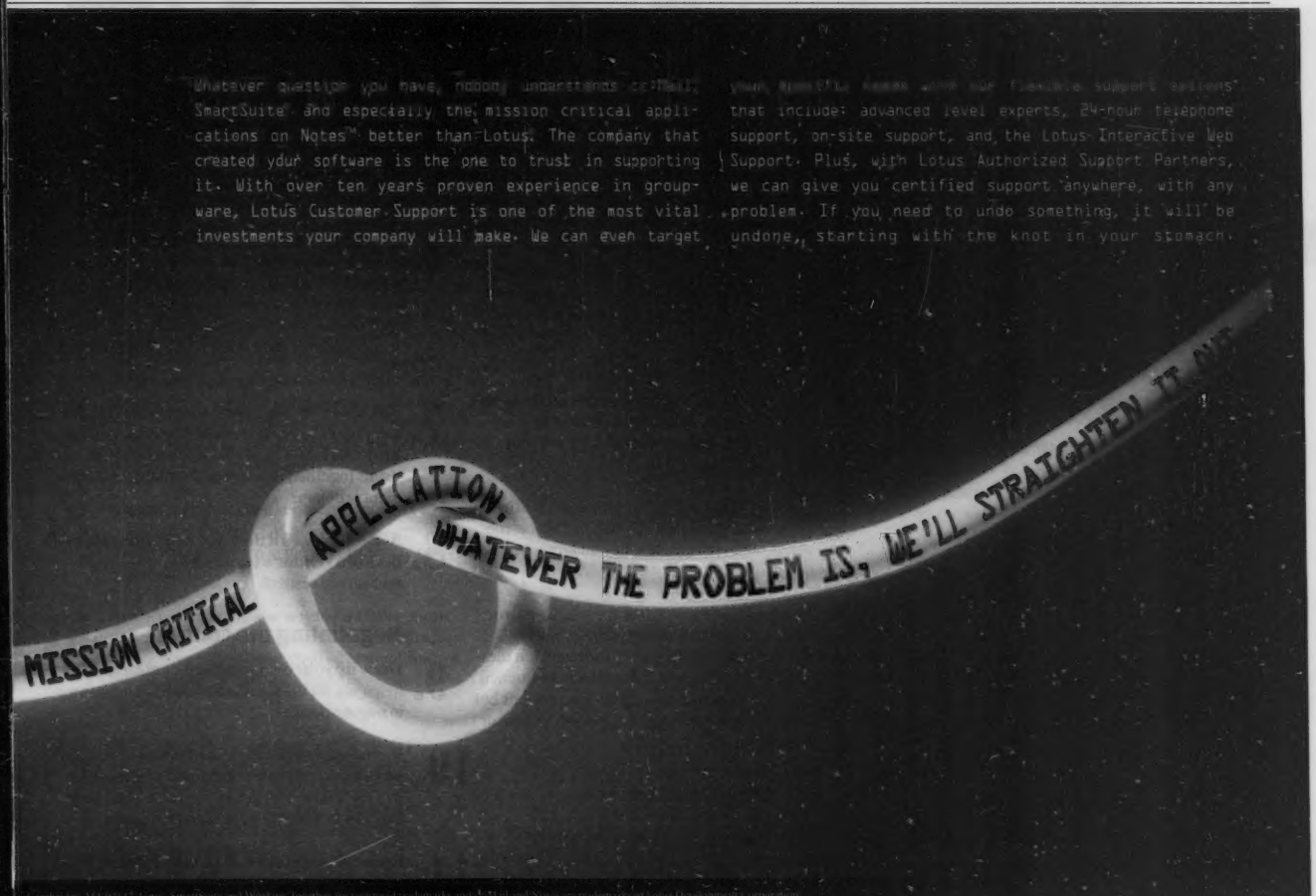
John Robb, an analyst at Forrester Research, Inc. in Cambridge, Mass., said even savvy users can get bad information when they take it from a trusted source — for example, somebody inside the company — who has used a link to an outside Web site that contains bogus information.

"Some companies are worried about content, and others are worried about users downloading something like PointCast that chews up resources," Robb said. Some worry that workers might download obscene material that provokes a sexual harassment lawsuit or pull down a Trojan horse that corrupts a file, he said.

"Companies are relying too much on common sense," Robb said. "They don't have clear-cut policies. They should write down a policy that includes advice to use branded and generic information, for instance."

> "I'd be reluctant to take something off the Internet unless I know the site."
>
> *— David Devcich, Beveridge & Diamond*

IS managers can remind users to be Internet skeptics with one clever piece of advice: "I always tell people that safe Internet downloading is like safe sex," said David Hughes at CAIS Internet in McLean, Va. "One, know your partner. Two, use protection."



FALL INTO READING
LOOKING TO BONE UP ON IT? WE LOOK AT 11 NEW BOOK TITLES OUT THIS FALL. SEE PAGE 88.

Managing

20 ways to avoid getting hyped into a bad deal

BY ROBERT L. SCHEIER

Vendors may be able to lure a hard-core gambler from a blackjack table. But you don't want to get burned when you find out they can't deliver on their promises. Need some tips? Industry experts offer some pointers.

Check the specs

1. **Ask a vendor's reference accounts if they deployed the product after purchase.** Just because a big-name customer bought the product doesn't mean the company's happy or that the product worked as intended.

2. **Ask if the reference accounts were beta-test sites.** If so, they may have had more trouble than usual because of product teething pains.

3. **Get it in writing.** Ask vendors if they will include in their contracts any performance, reliability or support claims they make verbally. If not, why not?

4. **Test hardware and software in the environment in which it will be used.** Industry-standard benchmarks such as those from the Transaction Processing Performance Council are OK for basic performance comparisons but they are too generic to predict performance or reliability in your shop.

Check the people

5. **If your vendor promises local support, check the references of the local subcontractors or third-party firms.** Local support will be only as good as the local staff.

6. **Find out which employees your service vendor isn't telling you about and why.** Ask reference accounts about *all* the members of a vendor team who worked on a project, not just the ones the vendor included in its proposal to you. Which team members didn't work out and why?

7. **Ask about the skills and track record of the manager the vendor plans to assign to your project.** Has he been able to keep previous teams together, or are you inheriting a management problem?

8. **Ask references if they would hire any members of a vendor's team.** This is the ultimate measure of respect.

Negotiating the contract

9. **Draw up your own standard contracts.** This helps *you* set the agenda and take the initiative in negotiations.

10. **Include the contract in your request for proposals and require vendors to comment on it.** That tells you what vendors are willing to do and how flexible they are under pressure.

11. **Know what you need, how much you're willing to pay for it, and be willing to walk away from a bad deal.** That classic advice is too of-

ten ignored by information systems negotiators.

12. Hammer out specifics before — not after — you accept a product for an in-house trial. Once you start to rely on a product, you're less likely to take a hard line on price or other terms.

13. Negotiate the big stuff first. Otherwise, the vendor can bog you down in trivia until time pressures force you to accept his terms on the important issues.

14. Hold a vendors' conference. Bringing together competing vendors lets you answer all their questions at once and makes them sweat by showing them the competition. Book a small room to make the crowd look bigger.

15. Form a negotiating team made up of technical, legal and financial experts, all of whom understand your requirements. This lets you negotiate the best deal when you're ready, not when the vendor pushes you to buy because of price cuts or time pressure.

16. When you're down to a short list of vendors, tell them they're in a "zone of consideration" where you could sign a contract at any time. That forces vendors to put their best offers on the table at all times and gives you more control.

Fixing and avoiding problems

17. Use rewards and penalties carefully. Some customers fear detailed performance penalties will cause finger-pointing, not problem-solving. Others say the threat of penalties can prevent problems that would wind up in court. The bottom line: Penalties or rewards are best when tied to specific, measurable results, not just the delivery of products or services.

18. If team members are replaced, make the vendor pay the tab. Get at least partial credit for the time it takes to bring a replacement up to speed.

19. Insist in writing that a vendor's senior managers come to your site for status meetings. This gives you the home-field advantage, and the face-to-face relationship makes follow-up easier.

20. Build in a formal change-notification process. Your business requirements and the technology will inevitably change during the project. Spell out in the contract who can request and approve changes to avoid confusion and "scope creep." ■

Scheier is a *Computerworld* senior editor, management.

Do your homework

Joe Auer and Bruce Brickman spend their days watching IS managers deal with vendors. It isn't pretty. They see grown-up professionals routinely fall for vendor hype. They see those IS professionals believing endorsements by reference accounts that may not even use the product. They see IS managers pushed into technology decisions by users who are too eager for fast results.

Under such pressure, IS managers "are almost compelled to gamble" on technology without analyzing alternatives or setting up contingency procedures, says Brickman, an attorney in Manalapan, N.J.

Compared with the vendor's negotiating team, IS managers suffer "from a serious lack of experience, confidence" and understanding of complex contracts, says Auer, president of International Computer Negotiations, Inc., a consulting firm in Winter Park, Fla. "And the customer is almost always overly impressed with the vendor," he says, often approaching negotiations with the grins of children on Christmas morning.

Sometimes they just don't do enough investigating. Eric Duhon learned that last year when, several months into a multimillion-dollar systems integration contract, "it became apparent [the vendor] couldn't pull it off," says Duhon, vice president of technology at Consumer Credit Associates, a credit reporting firm in Houston. "We didn't verify the resumes" of those who would do the work, or their managers' backgrounds, he recalled.

With tighter screening, Duhon found another systems integrator who finished 95% of the work within 10% of budget and a month of the predicted time line.

When buying professional services, don't ask only about the staff the vendor used on previous projects. Ask about who on that team the vendor isn't using for yours, Duhon says. He interviews as many members of a team as he can to determine if personality problems or other woes might arise during his project.

Auer says many IS managers err by doing an on-site trial before negotiating a contract. "Your negotiating position is strongest before the supplier gets the product in the door," Auer says. He recommends finishing negotiations and signing the contract, with the right to cancel the deal within a given time frame if the trial doesn't work.

A typical vendor-supplied contract "doesn't promise they're going to do anything and provides no remedies for glitches," Auer says. He recommends IS managers prepare their own contracts.

Some hard-nosed IS managers warn against very specific performance penalties in contracts. They're hard to enforce, they say, and lead to finger-pointing rather than the cooperative atmosphere needed to solve complex problems.

"The last thing you want to do is go to court" when you should instead be delivering on your promises to users, says William Anderson, chief information officer and executive vice president at Prudential Securities, Inc. in New York. Instead of using penalties, Anderson tries to craft a contract both parties feel comfortable with. In one case, this involved letting either side back out if they couldn't settle their differences within six months. —*Robert L. Scheier*

IS Manager's Bookshelf

Students hit the books anew in the fall, so why not join 'em? Leaf through any of these 11 titles for some IT-related reading.

By Leilani Allen

Summer's over, so it's time to put away the Tom Clancy thrillers and get down to serious reading.

There are several new books for information systems managers that address key responsibilities (leading, managing change, strategic planning), people issues (productivity, collaboration) and key technologies (most notably the Internet).

Like it or not, IT managers are often at the forefront of corporate change; they implement technology that supports new business relationships and processes. So understanding how companies change and innovate is essential. Peter L. Brill and Richard Worth handle the basics in ***The Four Levers of Corporate Change*** (AMACOM, New York, (800) 262-9699; 192 pages; $22.95). The levers are transforming human traits such as anxiety and suspicion into trust and dedication; using power skillfully; using social processes to initiate change and give it momentum; and applying leadership to sustain change.

Leadership focus

If you're wondering how to increase your leadership abilities, ***The Leader*** by Normand L. Frigon Sr. and Harry K. Jacobson Jr. (AMACOM; 176 pages; $17.95) provides straightforward advice on vision, values, team building, communication and other topics. A self-assessment test and action plan are included.

More specific to IT is J. D. McKeen and H. A. Smith's ***Management Challenges in IS*** (John Wiley & Sons, New York, (800) 225-5945; 275 pages; $39.95), due next month. Though pricey, it covers the basic systems issues comprehensively. Similar topics are covered in the updated second edition of John Ward and Pat Griffiths' ***Strategic Planning for Information Systems*** (Wiley; 450 pages; $45).

But if we were measuring ideas by the buck, a real bargain would be Derek Leebaert's anthology, ***The Future of Software*** (MIT Press, Cambridge, Mass., (800) 356-0343; 320 pages; $13.50). The 10 essays cover the evolution of technology. Section II on collaborative computing and development models is especially good.

For a better understanding of how to achieve collaboration, Charles H. Kepner and Hirotsugu Iikubo offer ***Managing Beyond the Ordinary*** (AMACOM, 224 pages; $22.95). Using a cross-cultural perspective, they find collaboration can be achieved by focusing on 10 tasks. Those involve disciplining ourselves not to leap to the obvious or easy solution but instead finding the best possible fix and refining it until it is truly workable.

If you've wondered why that much-heralded new computer application had only a marginal impact on productivity, the answer may lie in Thomas K. Landauer's ***The Trouble with Computers*** (MIT Press; 440 pages; $15). He examines that "productivity paradox" and proposes a model of user-centered design, development and deployment.

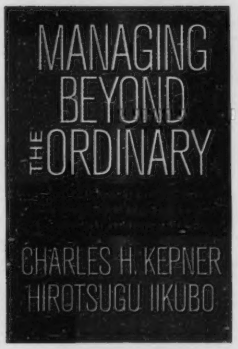
If you're interested in improving your own productivity, the latest entry in a popular series should help. ***Managing for Dummies*** by Bob Nelson and Peter Economy (IDG Press, a ***Computerworld*** sister company in Foster City, Calif., (800) 762-2974; 358 pages; $19.99) makes up in breadth what it lacks in depth and provides easily digestible sound bites on popular management topics. It's good for new managers and as a refresher.

Say what you will about overkill, the Internet continues to fascinate. Those with a philosophical bent should enjoy Mark Stefik's ***Internet Dreams***, coming in November from MIT Press (350 pages; $27.50). Stefik, a scientist at Xerox's PARC, examines the technology in light of metaphors drawn from ancient myths and archetypes. More down-to-earth is Jim Sterne's ***Connecting with Your Customers on the Web*** (Wiley; 400 pages; $24.95). Of note is a cost/benefit analysis and recommendations on the type of information a company should provide over the 'net. Another how-to book with up-to-the-minute advice is ***Building the Corporate Intranet*** by Steve Guengerich, Skipper McDonald and Douglas Graham (Wiley, 416 pages; $39.95), due next month. The authors appear equally comfortable in the world of legacy systems and the leading edge of Hypertext Markup Language, Java and Shockwave.

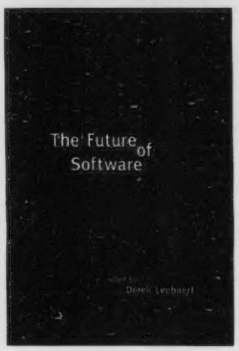
So there you have it — a cornucopia of topics that can help IT managers better understand the corporate world in which they work and the future of their own discipline — and some handy tips for wrestling with everyone's current hot topic.■

Allen is a director at Tenex Consulting in Burlington, Mass. She can be reached at lallen@tenex.com.

➡ ***Internet Dreams*** **looks at how ancient myths led to the modern communications phenomenon**



➡ ***Managing Beyond the Ordinary*** **focuses on how collaboration can lead to positive results**



➡ ***The Future of Software*** **contains 10 essays covering the evolution of technology**

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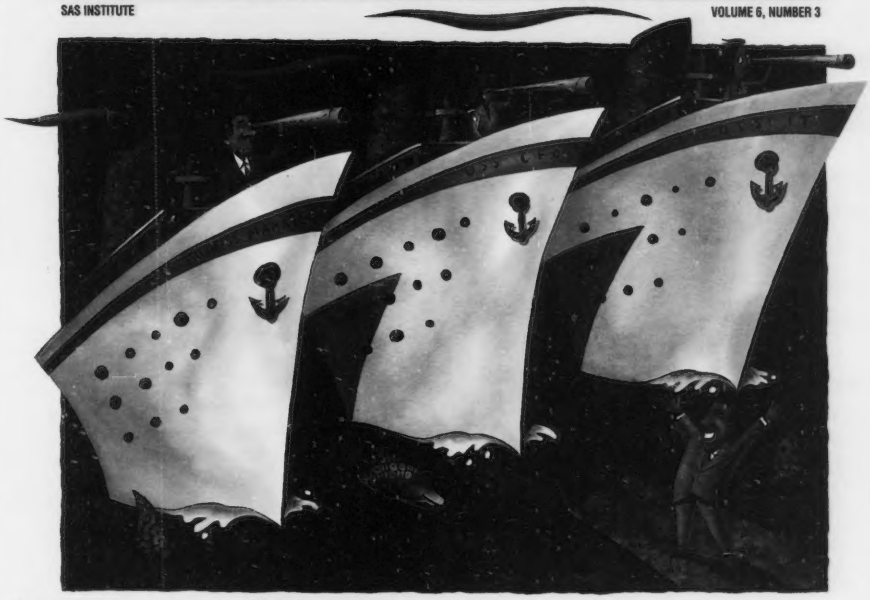

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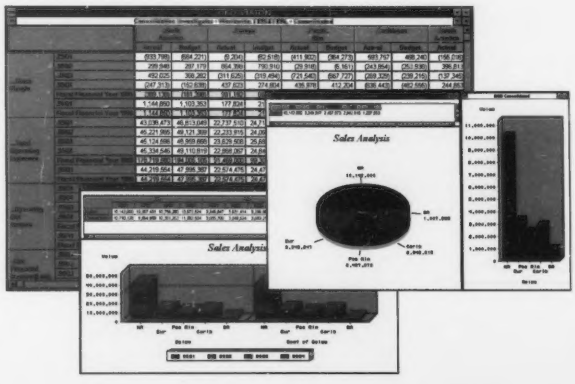

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Mary Prince Munn

SAS Institute's Program Manager for Finance Solutions

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Custom reach-through capabilities allow the user to view information not only in the multidimensional database, but also drill back to the transactional data stored in the source system. This reduces the duplicate storing of occasionally used data, while still allowing users to access the specific detail they need when a critical business question arises.

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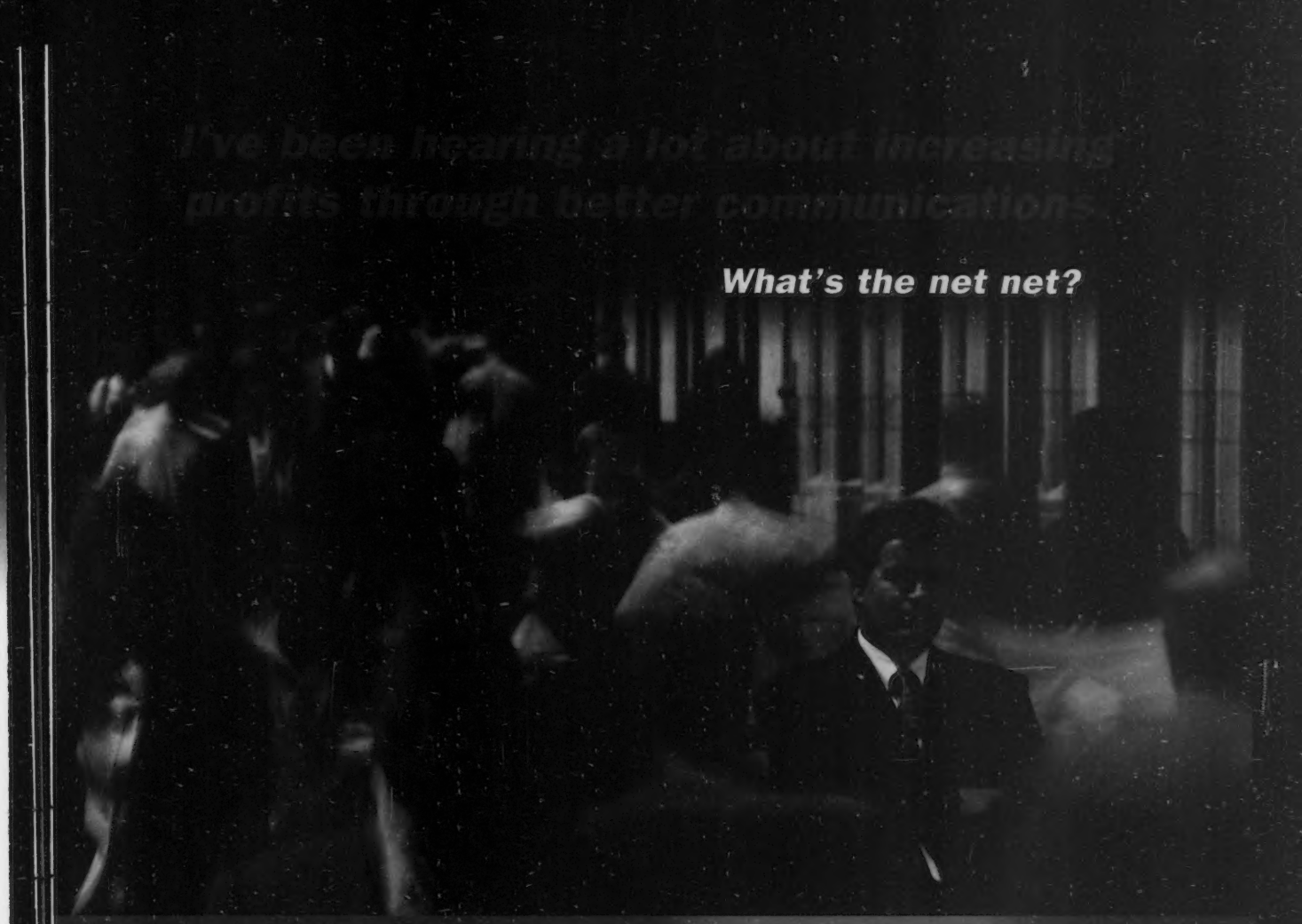

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Help desk hang-ups

What's the missing link in help desk training? Here's what five help desk managers have to say.

QUESTION:

What is the biggest training gap for help desk personnel?

ANSWERS:

Mike Thio
Director, customer support
S2 Systems, Inc.
Atlanta
"There's no training that caters to help desks. The problem is that help desk personnel need to be generalists. How do you train people to be experts on every product? What they need is an overview of all products, with an emphasis on troubleshooting."

Jim McGinty
Director, field systems support
Pizza Hut, Inc.
Wichita, Kan.
"The problem is finding the time away from the desk to train people. We allocate the time for new employees, but ongoing training is a problem. The calls never stop."

Andrew Greene
Associate manager, customer support
Eastern Pennsylvania
"The help desk is the last to find out what new technology the internal customers are using. It would be nice to be involved in the technology training process. Help desk [workers] and users should work together to be trained on the new technologies."

Mark Wachtmann
Technical services manager
County of Ventura
Ventura, Calif.
"PC applications and network concepts — protocols, etc. They're not getting the training they need because of budget and staffing constraints. But it's important because the network is the computer."

Leia Strothcamp
Team leader
Edward Jones
Maryland Heights, Mo.
"The hard thing is finding time to get people off the phones and keep them trained on all the new technologies. And it's hard to get people with both customer service skills and technical skills. We have to train them on one or the other."

Streamlining the thought process

How do you rev up an aging idea factory so it can grow tenfold in 10 years?
That's the challenge facing information systems managers at David Sarnoff Research Center, a $100 million research and development facility in Princeton, N.J. Founded in 1942 as the RCA labs, Sarnoff holds key patents in technology areas as diverse as high-definition television and pharmaceuticals. But President and CEO Jim Carnes wants to cushion Sarnoff from the cyclical contract research business by dramatically boosting its revenue from technology licensing and spin-offs founded around Sarnoff technology.

To reach that goal, Sarnoff, now owned by R&D firm SRI International in Menlo Park, Calif., needs to dramatically revamp its information systems so it can make better use of its Ph.D.-heavy workforce.

For starters, Sarnoff wants to make the submission of proposals more of a science than an art, says Mark Ciamarra, director of proposal development. It's doing that with a workflow system that gives project managers an earlier look at proposals, allowing them to evaluate Sarnoff's chances of success based on a standard methodology. The managers can then kill proposals that aren't likely to win. If that system eliminates even 10% of the proposals Sarnoff shouldn't submit in the first place, it will save the lab $500,000 per year.

But Sarnoff expects only 20% of its growth to come in its existing contract research business. The rest will come from equity in companies it spins off and increased royalties from technology licensing. Sarnoff hopes SAP AG's R/3, which it began implementing this month, will help it consolidate financial information from the spin-offs, says Diane Barbour, Sarnoff's director of IS planning and computer services.

If all goes as planned, R/3 will replace legacy financial systems that require work-arounds such as Microsoft Corp.'s Excel spreadsheets to take account of Sarnoff's different businesses. Sarnoff is also evaluating R/3's workflow capabilities to see if that can help its researchers share information more effectively.

— Robert L. Scheier

Famous firings

Feeling blue over getting the boot? Look at it this way — you have some high-profile company.

Former Chief Information Officer Alvin Borenstine, president of executive recruiter Synergistics Associates in Chicago, compiled a list of famous figures who were fired. You may have heard of a few.

Winston Churchill
Albert Einstein
Benjamin Franklin
Douglas MacArthur
Lee Iacocca
Henry Ford
Buckminster Fuller
David Letterman
George Steinbrenner
Billy Martin
Thomas Edison
Edgar Allen Poe
Rudyard Kipling

— Allan E. Alter

Einstein: *Even a genius can get the ax*

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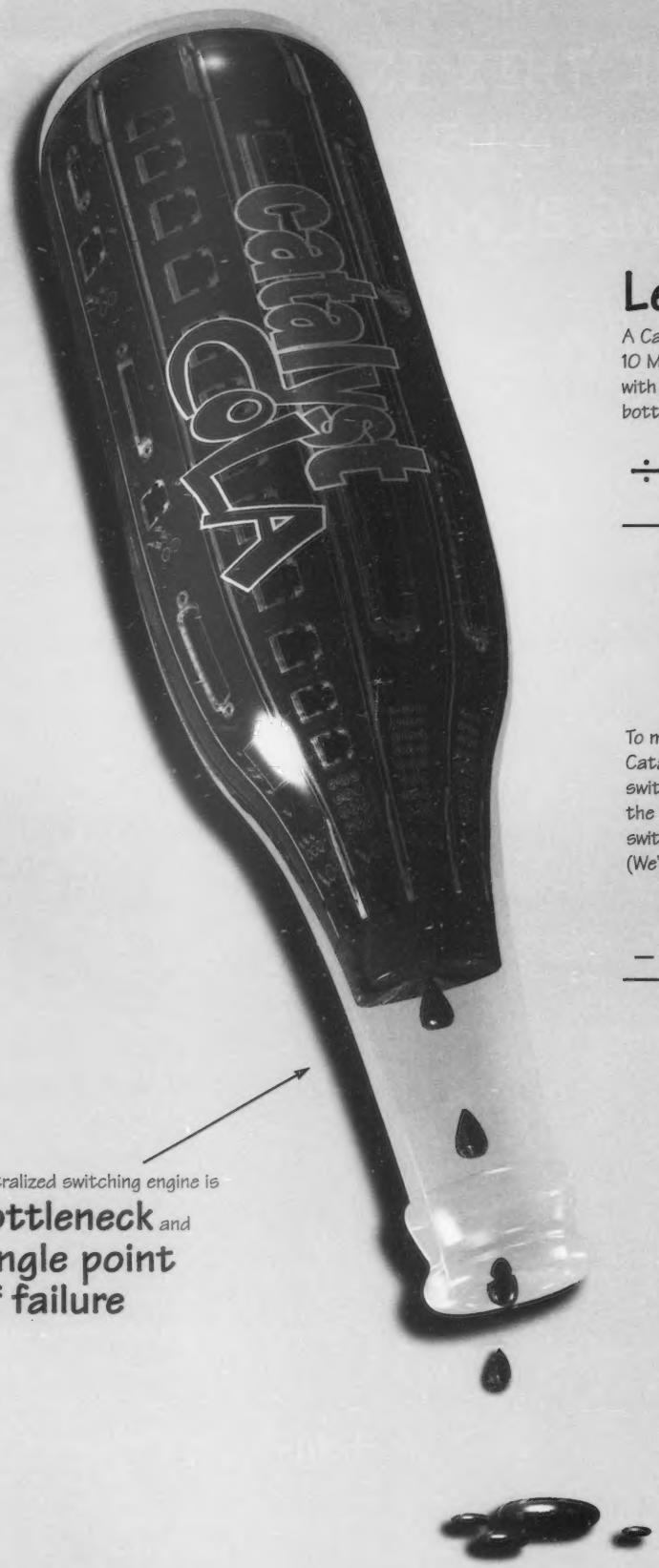

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÷ 200 Mbps uplinks to backbone
960 Mbps downlinks to desktop

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21% of total throughput

To make matters worse, Cisco is selling the Catalyst 5000 as a 50-port Fast Ethernet switch. At 100 Mbps per port, that's 5 Gbps. But the total capacity of the Catalyst's centralized switching engine is only 1.2 Gbps. You're oversubscribed! (We'll let you do the math for Gigabit Ethernet.)

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Centralized switching engine is
bottleneck and
single point of failure

Sorry Cisco,

but we *thought* the idea of switching was to *remove* the *bottlenecks*

The Catalyst 5000 may be an okay Ethernet switch. But running traffic from all 96 switched Ethernet ports (960 Mbps) out the two built-in Fast Ethernet uplinks (200 Mbps) creates a significant bottleneck in your network. Then what? Add one of Cisco's 12-port Fast Ethernet uplink modules for 1.2 gigs of raw switching power? Fine, except the total capacity of the Catalyst's centralized controller module is only 1.2 gigs. You're oversubscribed. And to make matters worse, that centralized controller in the Catalyst 5000 is a single point of failure!

Fortunately, there's a more reliable way to eliminate bottlenecks: the fully distributed, fault-tolerant MMAC-Plus from Cabletron Systems. With the MMAC-Plus, every module has its own switching engine and management processor. So the more modules you add, the more bandwidth and throughput you get. All with no single point of failure.

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20. Finance/Insurance/Real Estate
30. Medical/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/ Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./ Retailer
95. Other_____ (Please specify)

2. **TITLE/FUNCTION** (Circle one)
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19. Chief Information Officer/Vice President/ Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr. /PC Mgr., Tech Planning, Administrative Services
23. Dir./Mgr. Sys. Development, Systems Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
60. Sys. Integrators/VARs/Consulting Mgt.
CORPORATE MANAGEMENT
11. President, Owner/Partner,General Mgr.
12. Vice President, Asst. VP
13. Treasurer,Controller, Financial Officer
DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.
OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
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(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
App. Development Products ❒ Yes ❒ No
Networking Products ❒ Yes ❒ No

4. How many people are employed at this location and in your entire organization, including all of its branches, divisions and subsidiaries? (Select only one per column.)

	1. At this location	2. Entire Organization
A. 20,000 +	❒	❒
B. 10,000 –19,999	❒	❒
C. 5,000 – 9,999	❒	❒
D. 1,000 – 4,999	❒	❒
E. 500 – 999	❒	❒
F. 100 – 499	❒	❒
G. 50 – 99	❒	❒
H. 20 – 49	❒	❒
J. 10 – 19	❒	❒
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60. Sys. Integrators/VARs/Consulting Mgt.
CORPORATE MANAGEMENT
11. President, Owner/Partner,General Mgr.
12. Vice President, Asst. VP
13. Treasurer,Controller, Financial Officer
DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.
OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)
Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
App. Development Products ❒ Yes ❒ No
Networking Products ❒ Yes ❒ No

4. How many people are employed at this location and in your entire organization, including all of its branches, divisions and subsidiaries? (S.ject only one per column.)

	1. At this location	2. Entire Organization
A. 20,000 +	❒	❒
B. 10,000 –19,999	❒	❒
C. 5,000 – 9,999	❒	❒
D. 1,000 – 4,999	❒	❒
E. 500 – 999	❒	❒
F. 100 – 499	❒	❒
G. 50 – 99	❒	❒
H. 20 – 49	❒	❒
J. 10 – 19	❒	❒
K. 1– 9	❒	❒

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Buyer's Guide:

FIRING LINE

DB2 sites pin Web hopes on Net.Data

IS managers expect new DBMS/Web link to fix flaws in IBM's World Wide Web Connection

First in an occasional series of reviews that focus on the Web-enabling strategies of the leading database vendors.

BY KEVIN BURDEN

You can now add the corporate world's 2,000-plus terabytes of DB2 data to the information heap gravitating toward the World Wide Web.

IBM last week shipped Net.Data, a follow-on to DB2 World Wide Web Connection. And Net.Data is coming none too soon, say users interviewed by *Computerworld*.

"Anyone using WWW Connection knows it needs a lot of work," says Michael Strizich, director of student information systems at the University of California in San Francisco.

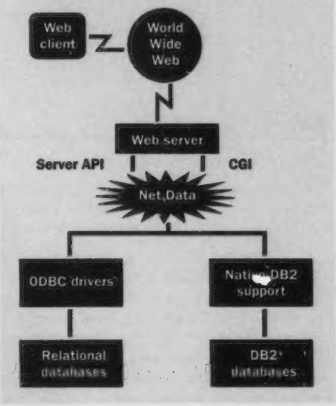
IBM's DB2 Web strategy also includes multimedia extenders that enable DB2 databases to handle multimedia data types.

However, enduring the initial pains of making DB2 accessible to Web users has paid off for the four users interviewed for this review.

Two were using WWW Connection; the other two used Net.Data. All four run DB2/2 on RISC servers, although one user unsuccessfully attempted to port the system to his MVS mainframe.

How it works:

IBM's Net.Data creates a front end so data in DB2, as well as other databases, can be queried over the Web



An Internet-ready database can make life easier for IS. For example, the Texas comptroller of public accounts in Austin uses WWW Connection to make the department's DB2-based public records accessible to any citizen with a browser. As a result, the office reduced the number of queries it runs for other state agencies and no longer needs to administer users, according to Ralph Hutchins, a systems analyst for the state.

But all four users complained that code written with WWW Connection's macro language is hard to maintain and functionally limited.

However, the two users interviewed who used beta releases of Net.Data say IBM made great strides in fixing these problems.

"Net.Data has a more structured language with decent object capabilities. WWW Connection had none of this," says John Springer, vice president of marketing at Corretti Soft, Inc. in Mountain View, Calif.

This functional leap is why each of the users said they are highly confident in IBM's Internet strategy. "This version shows me that they have their act together," Springer says.

The users grading their IBM product are:

Michael Strizich, University of California; Ralph Hutchins, comptroller of public accounts for the state of Texas; John Springer, Corretti Soft, Inc.; and a user at a large bank, who requested anonymity.

INSTALLATION

WWW Connection	Net.Data
B B	B C

Installing WWW Connection is a drudging task, and installing Net.Data is no easier. Both require other products that two users said they were unaware of, even after they had committed to IBM.

Beyond DB2, the setup requires IBM's Internet Connection Server and Distributed Database Connection Services, which lets separate DB2 databases communicate with one another. "When we found out we needed all this, we had IBM come and install for us," Hutchins says.

All four users run DB2/6000 under OS/2 on IBM RS/6000 servers, which "runs very well," Hutchins says. "But the setup doesn't port well to MVS [Open Edition]," he says. "We're more confident in our mainframe's security, but we've not been able to get the connection to work," he says. (See IBM responds below.)

QUERY PERFORMANCE

WWW Connection	Net.Data
A B	B+ B+

Net.Data queries, predefined or not, don't run as fast as those put to DB2 directly. But the Internet is the culprit.

There also is a noticeable drag when connecting to non-IBM databases through Open Database Connectivity (ODBC) drivers. "We all know if you're worried about performance, don't use ODBC," Springer says.

QUERY PERFORMANCE

WWW Connection	Net.Data
A B	B+ B+

Here is where users say they expect Net.Data to show improvements over WWW Connection. For example, WWW Connection contains a macro language similar to Hypertext Markup Language that users say is easy to write but difficult to maintain. (See IBM responds below.)

Net.Data delivers more structure and features Java tools and class libraries as well as visual builders for dynamic Web applications. "Net.Data gives us the conditional scripting we needed when we were using WWW Connection," Springer says. ■

IBM responds

Users should be able to access DB2 data on mainframes with WWW Connection or Net.Data via IBM's Distributed Database Connection Services. But the more direct way is through DB2 WWW Connection for MVS — just released last week. IBM also plans to release Net.Data for MVS version.

IBM and NetObjects in August jointly announced an open beta between IBM Net.Data and NetObjects' site management tool Fusion. These products should make code maintenance much easier.

Burden is senior researcher, *Computerworld* Buyer's Guide.

Ross M. Greenberg

Java or ActiveX? Maybe both

In a moment of masochistic ecstasy, I thought I'd decide which is best to use: ActiveX (merely renamed OLE) or Java (castrated C++).

So I created baby applets in each and exposed some of their strengths and weaknesses.

I had to determine where data from the applet must reside, how much data there is, if that data will be needed next time, what browsers and platforms to run on and, finally, what kind of security was important.

The basic difference between Java and ActiveX is in their perception of the world: a client/server view for Java vs. AnyDamnedThingYouWant from ActiveX. It's a no-brainer, right? It looks good for ActiveX, until you consider security.

With Java, you're safe. No writes to the local disk — they're not even mentioned in the application programming interface — means no malicious code from across the 'net if the language implementation du jour follows the specifications. The downside is that Java has limited functionality. You send everything to the server to save it. How wide was that pipe, again?

You can write locally to the cookie file for small amounts of data if you restrict yourself to Netscape, which can't natively run ActiveX applets. You can get a third-party ActiveX plug-in, but that runs only subsets of ActiveX.

With real ActiveX, no such limits exist. Whatever you want an applet to do, ActiveX applets can do it and do it now on a Windows 95 or Windows NT machine that runs Internet Explorer. What platforms tomorrow? Probably Windows 95 and NT. Can it store reams of data locally? No problem. Can it use various local components for quick access? No problem. Can it download and execute dangerous code, including viruses and really buggy crapware? No problem.

So your applet can write locally without a problem. Errant or malicious applets can, too, once you unknowingly give them permission to run. Thank goodness that with ActiveX's security, you'll know exactly who to blame for your trashed database or zapped hard disk. You do make backups, right?

ActiveX's security doesn't stick applets in a protected virtual machine, as Java does. It runs fettered on your local machine. But it is digitally signed. Er, Microsoft, do you remember Internet Explorer 3.0? Digital signatures don't assure that code is going to work correctly or isn't malicious. If it did, I wouldn't have 10 different debuggers and wouldn't make backups as often.

If you're going to run ActiveX applets . . . run, do not walk, and install an antivirus checker. Protect your hard disk from malicious and "whoops" problems.

I tried to coerce Java into saving locally generated data and walked away frustrated — security makes some needed things impossible. I could have attached to a local machine port and sent stuff out to a CGI application that writes locally. Yuck.

I secured my system against malicious ActiveX applets I picked up off the 'net and buggy ones I wrote — ones that eat hard disks for breakfast, not merely shut down machines. Cleanup wasn't a pleasant sight.

But nothing prevents mixing the two technologies. In fact, it's almost a match made in heaven, although neither Netscape nor Microsoft want you to think such noncompetitive thoughts.

ActiveX has the technology of a moderately well-thought-out container, and Java is all dressed up with no place to go and no way to write home about it.

Stick Java in a container that needs to be signed, add controls that know how to write to disk with well-defined hooks for the security impaired, and you're all set.

Set a corporate firewall standard that prohibits unsigned or unverified ActiveX applets from being run on your side of the firewall, too.

All that, just so you (or your customers) can edit spiffy animated GIFs using a remote applet instead of a full local application, huh? ■

Greenberg is a software developer who specializes in Internet and security products in Bovina, N.Y. He wants to hear about your cool applications. You can reach him at greenber@ramnet.com.

New debugger stands out in Visual C++ release

BY HOWARD MILLMAN

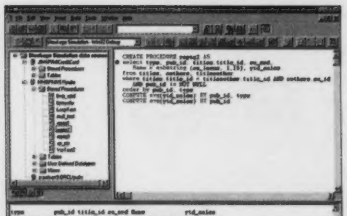
Microsoft Corp. has introduced two features in its recently released Visual C++ Enterprise Edition that could offer major time-saving benefits to those who develop complex applications.

The features, a navigation tool called DataView and an editing technique called SQL Debugger, allow developers to minimize the tedious SQL editing and debugging process and eliminate the need to take the application out of production. In addition to its database debugging features, the Enterprise Edition includes all the features found in Visual C++ 4.2, released this past July.

Aside from the new editing feature, most or all of the Enterprise Edition's other features should work with all Open Database Connectivity-compliant databases. Without the debugger, the product still offers a suite of competent development tools equal to — but not necessarily superior to — development suites from Powersoft Corp. and Oracle Corp.

The new debugging features will let developers view, edit and debug stored procedures and the C++ functions that call them. The view into the executing SQL code, displayed in a separate pane, provides a subsurface view as triggers and breakpoints, in a tracelike process, regulate the code's execution while the application runs live on one or more remote database servers. In my tests, I was satisfied with the smooth integration between Visual C++ and SQL Server 6.5.

Unfortunately, Microsoft has placed a high price tag on the debugging capability. The technology works with Microsoft's SQL Server 6.5 database and Windows NT versions 3.51 and 4.0, which is the only operating system that SQL Server runs on. SQL Server shops will have to upgrade to Version 6.5 to take advantage of the new features. A Microsoft spokesman said the company plans to offer the technology to other vendors, but none has taken Microsoft up on the offer so far.



SQL Debugger *in Microsoft's Visual C++ Enterprise Edition lets developers watch the debugging process*

C++ Enterprise Edition costs $1,000; owners of Visual C++ Professional Edition or the Subscription Edition can upgrade for $500. Contact Microsoft at (800) 719-5577 or www.microsoft.com. ■

Millman operates the Data System Services Group, a networking and problem-solving consultancy. He can be reached at hmillman@mcimail.com.

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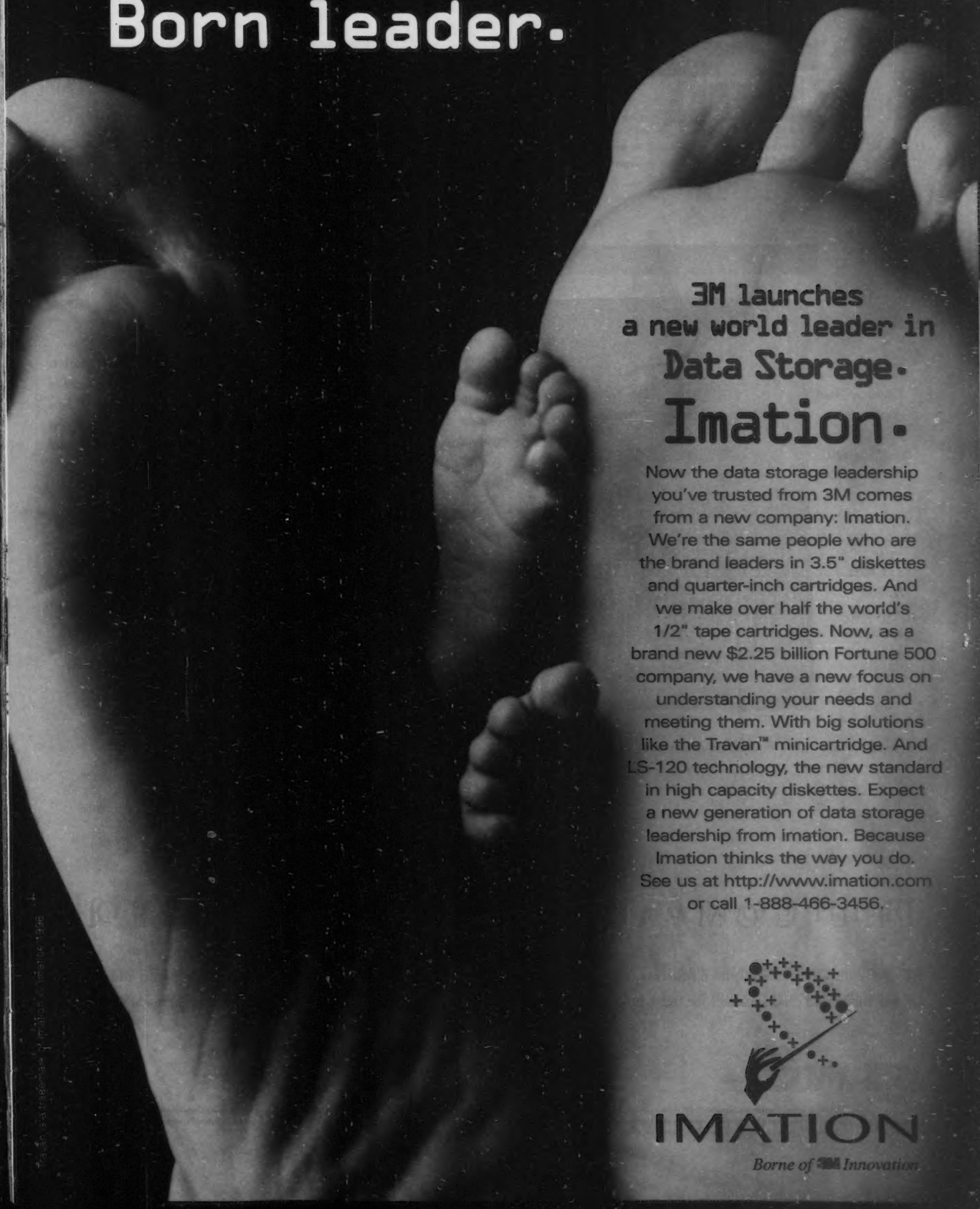

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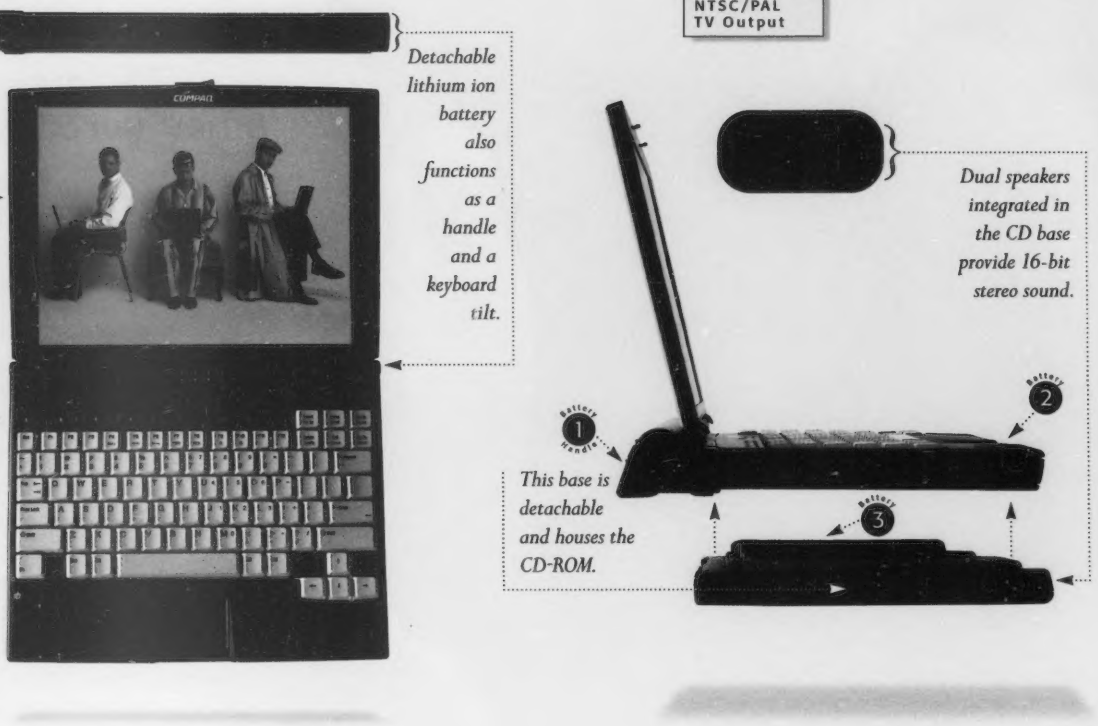

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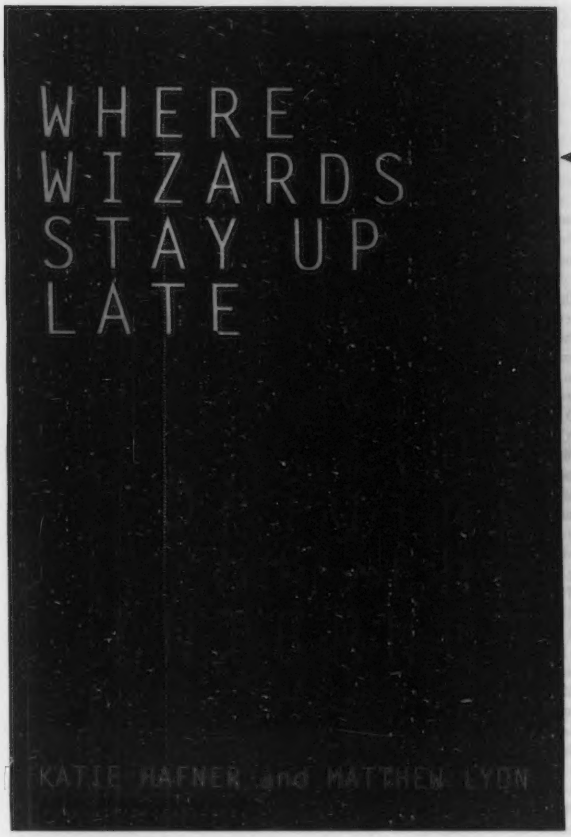
In Depth



ARPA. Started in 1958 by President Dwight D. Eisenhower as a research agency that need not report to the military. Originally the agency was space-oriented, but it refocused when NASA was founded. The term "ARPA net" was first used by Larry Roberts at a 1967 conference.

Book Excerpt

The computing world was surprised in late 1968 when Bolt Beranek & Newman, Inc. (BBN), a small consulting firm in Cambridge, Mass., was awarded a contract by the U.S. Department of Defense's ***Advanced Research Projects Agency*** *(ARPA). The $1 million contract was to build four* ***Interface Message Processors*** *(IMP) that would link the agency's Arpanet. Skeptics couldn't understand how BBN had beaten larger rivals for the contract (as it turned out, the company's flat organization and low bureaucracy levels were key points in its favor), and many thought the proposed packet-switching network wouldn't work at all.*

BBN's team, led by ***Frank Heart****, had a year to deliver the IMPs. They worked furiously throughout 1969 — worked on the routing code, worked with the sites that would have host computers, worked to develop remote diagnostics.*

BBN fulfilled the contract, and the network functioned. But it was small and stuck on the West Coast; only hard-core computing scientists knew of it. The following excerpt is from Chapter 6, "Hacking Away and Hollering," in the book, Where Wizards Stay Up Late: The Origins of the Internet.

IMP. The small computers that would control network traffic — originally, Honeywell DDP-516s with 12K bytes of memory. The BBN engineers' early focus on function and ruggedness over engineering elegance let the IMPs succeed.

Frank Heart. Had worked with Larry Roberts at Lincoln Labs, the MIT-allied think tank. His conservatism and caution marked him in a field full of eccentrics. He led BBN's effort to win the IMP contract.

Larry Roberts. Shy networking pioneer whose stamina and intellect astounded colleagues. Hired by ARPA director Bob Taylor in 1966 to head the networking project, he is widely considered the father of the Arpanet.

Bob Kahn. An MIT professor on leave at BBN in '68, he was interested in networks and thus found his way to the IMP team. His skills as a theoretician sometimes put him at odds with BBN pragmatists.

If the network were ever going to become anything more than a test bed, word of its potential had to spread. **Larry Roberts** knew it was time for a public demonstration. Roberts was on the program committee of the first International Conference on Computer Communication (ICCC), to be held in Washington in October 1972. He circled the date, called **Bob Kahn**, who was still at BBN, and asked him to organize a demonstration of the ARPA network as the sole exhibit at the meeting. The conference was about a year away. Roberts asked Kahn to start planning immediately. Kahn had, in fact, already been planning to leave BBN to go work for Roberts at ARPA. However, both men decided it would be a good idea for Kahn to stay at BBN for a while to plan the demonstration.

Kahn's first move was to recruit Al Vezza of MIT to assist him. Vezza always made a good impression. He was sociable and impeccably articulate; he had a keen scientific mind and first-rate administrative instincts. Between the two men there probably wasn't a key computer project in the U.S. research community they didn't know about or a key player they couldn't persuade to join them.

In mid-1971, Kahn and Vezza called a small group of about eight principal investigators from around the country to come to a meeting at MIT's Tech Square in Cambridge. They presented the idea of a highly accessible, engaging demonstration of the community's most interesting resources — accessible over the network.

Vezza knew it would have to be a live, interactive demonstration if it were going to have any impact. Someone at the meeting argued strenuously in favor of a videotaped presentation, to ensure against computer crashes during the show. Vezza was incredulous and argued just as strenuously that anything but a hands-on, live demonstration using actual equipment and software would signal uncertainty and potential failure for the whole ARPA network experiment. It had to be done in real time, it had

Wizards, *page 104*

Wizards

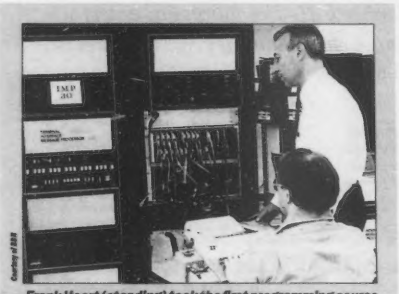
CONTINUED FROM PAGE 103

to be something that could be touched and controlled by anyone just sitting down at a terminal. It was a gamble, but if the demonstration succeeded, it would prove the network wasn't only real but useful.

Dozens of meetings took place at the various network sites to design interesting scenarios. Teams of graduate students and principal investigators signed on. And almost as soon as they did, they began to feel a certain panic. To pull this off, they would have to step up their efforts to finalize the unfinished network tools and protocols. Roberts, ever so correctly, had foreseen the likelihood that scheduling a highly visible public demonstration for October 1972 would build pressure on the community to mobilize and make sure the network would be functioning flawlessly by that date. Kahn too acknowledged that the demonstration was "set up to force the utility of the network to occur to the end users."

Intensive efforts were under way to debug applications and get host computers up and running in time for the public demonstration. Every terminal manufacturer had been invited to prove its equipment could work with the Arpanet: They were lining up to show more than 40 different computer terminals in the demonstration. Vezza negotiated with a vendor in the Washington area that agreed to lend a large section of antistatic, raised computer-room flooring for installation in the meeting room at the Hilton where the **Tip** and terminals would be located. AT&T Corp. promised it would come through with the data link. Getting such a circuit installed anywhere in less than six months was no small issue, and it certainly wasn't a small matter for AT&T to have that line into the Hilton as the ICCC approached.

Several days before the meeting, the networking equipment and people began arriving at the hotel. Kahn and Vezza had drawn up a floor plan. In a matter of hours, the room was a teeming tangle of wire and people speaking technical jabber. Technicians were stretching cables everywhere. Members of Heart's team were all around, tools in hand, deeply engaged in helping the various terminal manufacturers modify the connector cables on each of the multitude of terminal devices so that each could be connected to the Tip. Hours were spent stripping wires, rewiring the connectors, reconnecting, testing and debugging.



Frank Heart (standing) took the first programming course MIT ever offered in 1951. He disdained convention and titles, judging people on intelligence alone. This may be what made him so good at building teams.

The participants were working at a fever pitch. Many had packed up while still finishing their projects and came to Washington to add the final touches. It was the first time the whole community showed up in one place at one time. "If somebody had dropped a bomb on the Washington Hilton, it would have destroyed almost all of the networking community in the U.S. at that point," Kahn observed. Not to mention the international community, for even Donald Davies, father of the term "packet-switching," had come from England to see how this would all work out. "It was just an amazing experience," said **Vint Cerf**. "Hacking away and hollering and screaming and saying, 'No, no ... you got this one wrong.' Getting all the details right."

At the end of Saturday (the conference would open on Monday), the BBN Tip was like a king on a throne of wire running to all corners of the room. AT&T had done its job and turned up at the right moment with the right line. Sunday was another frantic day of preparation. A preview demonstration was scheduled for a group of VIPs — a Washington coterie of congressmen, Pentagon officials and others. At about 6 o'clock in the evening, minutes before the doors were to open, Vezza was standing near the Tip when **Robert Metcalfe** said, with no faint urgency in his voice, "We're losing packets!"

Vezza shot a look to **Alex McKenzie**, who was standing right there: "Alex, what changed?"

McKenzie reached for the hot line to Cambridge and shouted into the phone, "Get it out! Get it out!"

The **Network Control Center** (NCC) had been watching and monitoring a slightly glitchy line in the network for the past few days. They thought they'd solved the problem that afternoon and had added the circuit back into the network. Within 30 seconds of McKenzie's call, the link was removed by the operators at the NCC and packets were flowing smoothly at the Tip again.

BBN's remote-management technology had never had a finer moment.

On Monday morning, the Arpanet computer scientists eagerly awaited their public. When curious conference-goers approached, the network guys, like Jehovah's Witnesses handing out copies of "The Watchtower," thrust Metcalfe's scenarios book into their hands and ushered them into the room. Although it was possible to follow the instructions, to all but the initiated the scenarios book was fairly incomprehensible, and it was easy to foul up the system. One man sat down in front of a terminal and typed in an instruction from the book. For some reason or other, the host he was trying to reach wasn't functioning, or he miscued the thing. The message came back: "HOST DEAD."

"Oh, my God. I've killed it!" he exclaimed. He wouldn't touch a terminal after that.

Some of the most ingenious demonstrations involved English-language conversational programs. These were elaborate programs constructed to engage a user in a verbal dialogue with a machine. There were four programs on display; they offered an especially fascinating glimpse into interactive computing.

PARRY, the first of these virtual conversationalists, mimicked the belief system of a paranoid psychotic. He held up his end of a conversation by offering canned responses to statements he thought he understood. Otherwise, his response was noncommittal. PARRY was the brainchild of Dr. Kenneth Colby at Stanford University.

Hundreds of people participated in the ICCC demonstration over its 2½ days. Executives, engineers and technicians from the telecommunications and computer industries, a good number of them, entered the room skeptical of the Arpanet and packet-switching. Many left believing the technology might be real after all. For the most part, the 40-odd terminals worked, the resources were engaging, the Tip ran spectacularly, and the Arpanet came alive. "It was almost like the rail industry disbelieving that airplanes could really fly until they actually saw one in flight," Kahn said.

The ICCC demonstration did more to establish the viability of packet-switching than anything else before it. As a result, the Arpanet community gained a much larger sense of itself, its technology and the resources at its disposal. For computer makers, there was the realization that a market might emerge. "The sense in that room was not one of fear or concern," **Leonard Kleinrock** said, "It was excitement. I mean, here we could show it off, we knew it would work. Even if it fumbled, these things were fixable. It was a wonderfully exciting experience." Roberts had shown steady confidence. He had gotten what he wanted, a more solidified effort, the foundation for a community, something he could build on. The crash efforts and panic that preceded the event had paid off.

Kahn had just devoted a year of his life to demonstrating that resource-sharing over a network could really work.

But at some point in the course of the event, he turned to a colleague and remarked, "You know, everyone really uses this thing for electronic mail." ■

Tip. Terminal IMP. Added relatively late in the project's development, the device allowed users to log on to distant hosts, thus making the Arpanet accessible to many more users.

Robert Metcalfe. With Danny Cohen, did early network experiment: They used a Harvard PDP-10 to simulate an aircraft carrier landing, then displayed the image to an MIT terminal. He went on to invent Ethernet and found 3Com Corp.

Alex McKenzie. The BBN employee who first pushed to shift Arpanet from experimental to operational mode. His organizational skills made him the logical candidate to manage the Network Control Center.

Network Control Center. A revolutionary remote monitoring system. A teletype was connected to all IMPs, each of which reported in every 15 minutes. The early focus on remote monitoring was one of the ideas that made the Arpanet fly.

Leonard Kleinrock. A friend of Larry Roberts, he was working at UCLA in 1966 and won the ARPA contract to set up the Network Measurement Center, a lab to test network performance.

Vint Cerf. Was a UCLA grad student in '68. Worked with Leonard Kleinrock running Network Measurement Center. He would go on to head MCI Communications Corp.

Where Wizards Stay Up Late: The Origins of the Internet. Simon & Schuster, New York. Hardcover, 320 pages, $24.

Written by Katie Hafner and Matthew Lyon. Hafner is a contributing editor specializing in technology at *Newsweek* and is coauthor of *Cyberpunk: Outlaws and Hackers on the Computer Frontier.* Matthew Lyon is assistant to the president at the University of Texas. They are married and live in San Francisco.

Computer Careers

Paper Chase

Greater value—and salaries—are being placed on IS certifications. But they're not always worth the paper they're printed on. BY TOM DUFFY

American companies spend upwards of $3 billion annually on training and certification for their information systems professionals. But despite heavy demand by corporations and resellers, particularly in the area of network and database management, hiring managers would be wise to question the effectiveness and value of certification programs.

When a manager sees a reference to certification on a prospective employee's resume, he should start to ask some tough questions, according to Judith Hale, president of Hale Associates. The Western Springs, Ill., firm designs and validates certification programs.

Hale says managers should ask themselves the following question:

- Are some certification programs better than others?
- How can you judge whether a particular training program tests a prospective employee for the specific skills that will be used on the job?
- Is certification itself convincing evidence that someone is the right person for the job?

"It's inappropriate for any supervisor to hire people simply because they are certified," Hale says. "Most certifications are not rigorous enough to predict someone's ability to [perform a task] on the job."

The most effective certification programs tend to be those associated with colleges and universities, says Timothy O'Leary, vice president of Epsilon, Inc., a database builder in Burlington, Mass. O'Leary says he has found that academic certification requirements are often tougher, and professors typically have valuable industry experience.

Employee commitment

The value of a particular program also depends heavily on the commitment of the employee, O'Leary says. "A lot of people will go get the certificates just to put it on their resume. I find that more times than not, it was an abbreviated one- or two-week thing, and then three weeks later they have forgotten what they learned," he says.

That seemed to be the case with Mack Parham, an engineer who designs and reviews a joint database system for the armed forces. Parham recently completed certifications in Oracle7 application development and database management.

When asked what he learned in the course that he couldn't do before, Parham failed to cite anything specific. "It's basically just to show management and higher command that you are actually applying yourself," he says.

Oracle7 certification seems to be more useful to Ganesh Bulbule, a systems analyst at DataPrompt, Inc. The Silver Spring, Md., contractor develops database applications. Bulbule said certifications in Oracle application development and database management helped him do a better job designing Oracle database applications. "Before the certification, I was leaving the minor details such as how to space applications or indexing to the system administrator," Bulbule says. "It helped with understanding Oracle ins and outs."

Managers should ask pointed questions about a candidate's actual certification process, O'Leary says. These include whether the certification simply required the person to take a test, whether there were training sessions and what tasks were involved in the testing process. And if there was a test involved, was it done on the job or in a situation that closely resembled the work environment?

"The more the test environment reflects the real-world environment, the greater the likelihood that the ability to do it in a controlled environment predicts someone's ability to do it on the job," Hale says.

Of course, IS hiring managers should check the date of the certification. If it was more than a few years ago, ask what the employee has done in the interim to keep up with new developments.

"Certification by itself without knowing when it was granted might not indicate a certain currency," says Alan Salsbury, president of Learning Tree International, Inc., a training and certification firm in Reston, Va. "If it is more than five years old, you want to delve into what other education they have had to stay current," Salsbury says.

Comparing candidates

Because it takes time and effort to take training and certification courses, the work can be seen as an indicator of a person's dedication to their field. So regardless of the quality of the particular program, certification can be used as a first step in comparing candidates for a job.

"Because somebody is certified, you don't want to say that you don't need to do technical reference testing," Salsbury says. "But it's a pretty good prescreen when you've got a stack of resumes to go through."

But technical skills aren't all that someone will bring to a job. So Hale says hiring managers shouldn't let certification distract from the overall picture. "You can have a person who does very well on certification but who has the interpersonal skills of a toad. They won't be a team player," Hale says. ■

Duffy is a freelance writer in Somerville, Mass.

Reasons to believe

For the most part, IS hiring managers are convinced of the value of certifications

How they respond to certifications . . .

- 20% pay salary premiums for certifications.
- Premiums can run as high as 20% of base salary.

What they are thinking . . .

- There is a clear correlation between certification and on-the-job performance.
- Certified IS employees outperform noncertified employees in most areas.
- Certified IS professionals tend to have greater self-esteem and leadership qualities.

Source: A 1994 survey of IS managers by Dataquest in Framingham, Mass.

Regional Scope: Dallas

Yeeeehah!!

IS pros can really strike it rich in this revitalized Lone Star city

By Leslie Goff

THINK OF THE DALLAS Cowboys' morale-crushing 22-6 loss in its season opener against the Chicago Bears as illustrating Dallas' economic decline in the early '90s. Then think of their 27-0 shutout of the New York Giants in their second game as embodying the city's booming economy today.

From the posh luxury of Southfork to the stockyards of Fort Worth, the metropolitan Dallas area has struck black gold once again. The city that had defined grandiose living in the '80s was hit hard by the subsequent downsizing of this decade. Since 1993, however, Dallas' denizens of industry have rallied for a fourth-quarter comeback and created 67,900 new jobs last year.

High demand

As Dallas has scrambled back into the game, information systems professionals have become as sought after as a Troy Aikman autograph. Client/server application developers, SAP professionals, Internet experts and mainframe programmers are all in high demand.

"In 1992, with all the local downsizing, the IS market was flooded with applicants, and there were no openings," recalls Sean Napoles, a recruiter at Datapro Personnel Consultants, Inc., an IS placement firm.

"It would take me 50 client calls to find two openings. Now, whenever I pick up the phone, I get openings. I have 350 openings for permanent positions right now, and I don't have enough applicants to fill them."

Driving force

Surges in the telecommunications, construction and business services drove last year's area-wide growth; business services and the retail trade created the most new jobs. But IS gains are across the board, Napoles says, noting that all his clients have increased their hiring budgets for next year.

"All the industries here are doing extremely well, even the insurance companies, and I couldn't say that five years ago," Napoles says. "Greyhound has come out of Chapter 11 and is hiring. In fact, even the oil and gas companies that were hit so hard, companies like Mobile, are coming back to us looking for client/server individuals."

The local IS market is so tight that "the best people are only on the market a week or two," says Mike Haefner, vice president of IS and human resources at Sabre Decision Technologies (SDT), the consulting arm of American Airlines' Sabre Group subsidiary in Fort Worth.

SDT last year hired a whopping 1,200 new IS staffers and is being even more aggressive this year, Haefner says. Of the 50 to 75 new employees joining the company each month, 75% are being hired for IS positions, predominantly for object-oriented client/server application development.

Varied skills

"We haven't seen market saturation in any of the skill sets that we're looking for," Haefner says. "Our products cover a wide gamut, and, as such, our shop requires almost every contemporary and legacy skill set you can think of."

Jaya Shankar, who relocated with her family to Dallas from Cleveland, says of the four companies she interviewed with in her adopted city, three offered her a job. She started interviewing in Dallas in February and, by April, was ensconced as a systems analyst at a Fortune 50 company.

"I got a great relocation package," Shankar says. "Basically, they took care of everything, from the interview expenses to moving to a temporary place to live. I don't think many companies in other areas would have offered what they did."

The current demand for IS professionals in Dallas is expected to continue unabated. By 2000, according to the Texas Workforce Commission's labor market projections, Dallas will host 49,950 systems analyst positions, an increase of 58.6% from 1993, and 40,350 programmer jobs, up 18% from 1993. ■

Goff is a freelance writer in New York.

Online resources for IS job hunters

Area newspapers
The Dallas Morning News
www.dallasnews.com

Fort Worth Star-Telegram
www.startext.net

User groups
Unix Users Group of Dallas
www.august.com/dfw_uug

Employment listings
The Dallas Computer Jobs Store
www.ComputerJobs.com/Dallas

IS professionals job listings
rampages.onramp.net/~ispro

The Hiring Assistant
www.hiring.com

Usenet
dfw.jobs

Community information
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www.relolink.com

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www2.dallas.net

Greater Dallas Chamber of Commerce
www.gdc.org

Dallas Visual Reality
www.vr-dallas.com

Fort Worth Home Page
www.guyz.com/cow/console.html

DFW Area Web
www.dfwareaweb.com/menu.html

Will I be happy here?

Dallas' residents, with typical Texas pride, gush about their city's recovery. But is this Lone Star city all it's cracked up to be?

Yes, says Mike Haefner, vice president of IS and human resources at Sabre Decision Technologies, who relocated to Dallas from Rochester, N.Y.

"I moved here five years ago, and in my experience, we've had so much growth that we really have a level of convenience and variety you don't have elsewhere. You can find a little of New York, a little of the West Coast, a little of the Midwest. Dallas has pockets of everything.

"You can get at least one-third more house here for your money than you can in upstate New York. And there's no state income tax here so that was like getting a 7% to 8% increase in salary." — *Leslie Goff*

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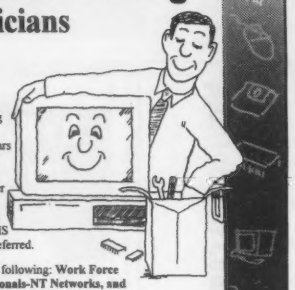

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DSC offers competitive compensation and an excellent benefits plan. Please send your resume to: DSC Communications Corporation, 1000 Coit Road, MS HRPB6, Dept. CW0923, insert job code from above, Plano, TX 75075-5813; fax (972)477-8149; or e-mail (include job code) recruit@dsccc.com. For more information on DSC, please see our home page on the Internet at http://www.dsccc.com. Principals only, please. An equal opportunity employer M/F/D/V.

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Fleming Companies, Inc.

Fleming Companies, Inc., the nation's leading food marketing and distribution company, has the following openings in the Information Technology department at the corporate staff location in Oklahoma City:

Sr. Programmer/Analyst

Requirements include 2-5 yrs programming experience and proficiency in COBOL, CICS, VSAM, and MVS/ESA or VSE/ESA. Familiarity with one or more of the following a plus; CSP, DB2, SQL, TSO and ISPF. Knowledge of wholesale/retail food industry a plus.

Oracle DBA

Requirements include 5+ yrs experience working with Oracle 7 in client server environment, logical/physical design and implementation/support, establish/integrate Oracle standards. Experience working with DB2/MVS, Unix/AIX/NT, networking, purchased computer applications, and development tools a plus. BS in related field required.

Fleming offers a competitive salary and benefits package. Qualified candidates should send a resume specifying position and salary history to: **Fleming Companies, Inc., Attn: Associate Support, P.O. Box 26647 Oklahoma City, OK 73126.**

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Visit our web site www.ionet.net/~fleming/

Systems Engineer. 40 hr/wk from 9am to 5pm. $48,000/yr. Design and develop software for collecting and maintaining Adverse Events data related to pharmaceutical drugs. The application uses Uniface as front-end tool under Microsoft Windows 3.1 environment, and Rdb DBMS on VAX-VMS cluster as back-end using Decnet and TCP/IP networks. Require 2 year experience in job offered or as information Technology (Systems) Engineer or as Systems Analyst/Programmer must include work with VAX, UNIX, Ingres, and Decnet and 6 months experience using UNIFACE. Must have proof of legal authority to work permanently in the U.S. Please send resumes to Illinois Department of Employment Security, 401 South State Street-3 South, Chicago, Illinois 60605, Attention: Ruth Daniels; Reference #V-IL 14483-R. An Employer Paid Ad. No Calls. Send 2 copies of both resume and cover letter.

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ANALYST/PROGRAMMER $35,490 per year Design, develop new application programs, and maintain, enhance existing application programs, with comprehensive knowledge of software development cycles, which includes designing, coding, debugging, and testing on a multi-user relational database design environment. And wide variety of assignments, including complex billing system, accounting and financial, and trouble-shooting applications on a large database system with knowledge of multiple languages, i.e., RPG 400, CLP 400, AS/SET Case Tool, C, Pascal, Visual Basic, Fortran, Cobol, SQL and Multiple operating systems, i.e, AS/400, UNIX, MS-DOS, Windows; working on a LAN environment with knowledge of Novell, Btrieve, and other PC-based software skills. Requires a Bachelor of Science in Computer Science, plus two years experience as Computer Programmer. Requires knowledge of RPG III language on IBM AS/400 System. Respond to: Mississippi State Employment Service, P.O. Box 13348,5959 I-55 North, Jackson, Mississippi 39236-3348. Job Order No# MS2768383.

Systems Analyst to determine dataflow & programming requirements; determine detailed specifications for files, records, data process requirements & reports; provide guidance & direction to programmers & assist with planning, coordination & quality control of assigned projects; prepare, review & analyze program specifications; design, write & debug business oriented computer programs; utilize business applications including finance, personnel purchase, inventory control, bill-of-materials, order processing & engineering; Reqs. Bach. in Comp. Sci. &/or Engg., or Electrical or Electronics Engg or its equiv, 1 yr exp in job offered or 1 yr related exp such as Programmer or Programmer Analyst. Related exp must include design & development of systems & client server based applications using UNIX, Visual Basic, C++, Helpbreeze, SQL Server & ORACLE; $38,095/yr, 40 hrs/wk 8a-5p. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #96896 "Employer Paid Ad"

Information System Specialists

Port Huron Hospital, located on the shores of Lake Huron and within 60 minutes from the Metro Detroit area, has an immediate opening for:

*** Operations & Technical Lead** - This position requires a Bachelor's Degree in Business, Healthcare, or related field. Two years' in a leadership role in a computer operation environment. Operational knowledge of UNIX, Relational Data Bases, and Interface Manager or engine required. Individual should have experience with teams and a commitment to customer service.

This position requires good communication, problem solving, and organizational skills.

For more information on becoming a member of the Healthcare Team at our 264-bed facility please send resume to:

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EOE

COMPUTER CONSULTANT - Study, design, develop and implement a Business Application such as asset management, inventory management, cost analysis in a client server environment involving writing programs, forms, menus and reports based on the client's specifications using Oracle's CASE Methodology for systems development. Analyze, model, design and develop programs using Oracle's Designer 2000 and Developer 2000 suite of tools. Write programs using Case Tools, Oracle Forms, SQL, PL/SQL. Salary, $50,080 per year, 40 hrs. (8:00 a.m. - 5:00 p.m.). Requirements, M.S. degree in Information Systems, 1 year experience as a systems consultant to include analysis, design, development, implementation and maintenance of programs utilizing Oracle Forms, Oracle Reports, SQL and CASE Methodology for systems development. Applicant must have completed one graduate level course in each of the following: systems analysis and design, database management systems, software engineering management. Send resumes to MESC, 7310 Woodward Ave., Rm. 415 Detroit, MI 48202. (Ref. No. 108096) Employer paid ad.

Programmer/Analyst (4 positions) Milwaukee,WI) Design, develop & implement financial & administrative applications computer systems on IBM mainframes in PL/1 under TSO, VSE & CICS operating systems in VSAM. 2 yrs exp in job offered. $45,000/yr, 40 hrs/wk, 9-5, M-F. Two copies of resume to: M. Brooks. File #s 960282 & 960278; DWE-ALC, P.O. Box 7972, Madison, WI 53707-7972. Reference file 960282 & 960278.

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Monday, November 4, 1996
Hotel Nikko, San Francisco, California

On November 4, 1996, you have a special opportunity to update your recruiting skills and network with recruiters in your area at the first-ever San Francisco area Corporate Technical Recruiting Conference, held at the Hotel Nikko, San Francisco, California.

A Full Schedule of Contemporary Topics

7:30am **Continental Breakfast & Conference Registration**

Concurrent Sessions:

Candidate Selection: How to Pick the Right People
Dr. William Swan, President, Swan Consulting

The Critical Importance of Soft Skills and the "Invisible Assembly Line"
Todd Schmick, Priority Management Systems, Inc.

Immigration Issues
David P. Berry, Esquire, Berry & Appleman

Proactive Recruitment Techniques
Dave Drugman, President, Bay Cities Research, Inc.

12:15pm **Luncheon Keynote: Industry Trends**
Maryfran Johnson, Executive Editor, Computerworld

Repeat of Concurrent Sessions

Town Hall Forum
John Younger, President, y-oet

6:00p.m **Program ends**

Selected sessions include:

Proactive Recruitment Techniques

Dave Drugman, President, Bay Cities Research, Inc.
To remain competitive, today's technical recruiters need to be aware of the latest trends in sourcing and proactive recruiting. This in-depth session from a leading expert will explore this critical topic and will help you put your resources and expectations into proper perspective.

Industry Trends
Luncheon/Keynote Address

Maryfran Johnson, Executive Editor, Computerworld
Sure, there are new skills entering the market every day, but what are the trends that drive these skills? Maryfran Johnson, one of the industry's leading watchers of the Information Systems profession will give you an up-to-the-minute view in this very special keynote address.

Town Hall Forum

In this session, you'll not only be able to propose your specific questions for open discussion, you'll learn of real world issues and solutions from your peers. You won't want to miss this rare opportunity as John Younger, an expert in the HR field, leads us through this modern discussion of your recruiting topics.

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SR. PROGRAMMER ANALYST

You will analyze and resolve business, database and application system problems as well as design, code and implement changes to satisfy business requirements. Requires:

- 3-5 years of experience in developing business, TPA or insurance industry applications
- 1-3 years of experience in AIX or UNIX; Window GUI and client/server application development with Powerbuilder and Sybase
- A working knowledge of programming functions (i.e. interactive planning, design, programming and testing skills)
- Strong analytical, problem-solving, communication, interpersonal and project leadership skills

Prefer a Bachelor's degree/equivalent background in MIS, Computer Science or a related field. Successful completion of LOMA classes is a plus.

SYSTEMS CONSULTANT

You will provide specialized as well as global technical and business assistance on assigned projects, applications, databases or telecommunications systems. Requires:

- 5-7 years of experience in developing business applications and systems analysis/ specification development based on business requirements
- 5-7 years of experience in TPA or insurance industry applications
- A working knowledge of programming functions (i.e. interactive planning, design, programming and testing skills)
- Excellent analytical, problem-solving, communication, interpersonal and project management abilities

Prefer a Bachelor's degree/equivalent background in MIS, Computer Science or a related field as well as at least a 1-year background in the following: AIX or UNIX; logical modeling of relational data structures; client/server and Window GUI application development with Powerbuilder and Sybase. Successful completion of LOMA classes is a plus.

BUSINESS ANALYST

You will troubleshoot application problems, train client personnel and define application system administration set up. Requires:

- 3-5 years of experience in TPA or insurance applications in addition to developing business applications, workflow, procedures and application systems problems
- 1-3 years of experience in systems analysis and specification development based on business requirements as well as developing client/server Window GUI applications
- A working knowledge of programming functions (i.e. interactive planning, design, programming and testing skills)
- Excellent analytical, problem-solving, interpersonal, communication and project leadership skills

Prefer a Bachelor's degree/equivalent background in MIS, Computer Science or a business related field.

We offer excellent benefits plus all the potential you desire to build your career. Please send resume and salary history to: **USA Administration Services, Inc., Mail Stop 225035, P.O. Box 2948, Overland Park, KS 66201-1348.**

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Assistant Provost for Information Technology

Loyola University New Orleans seeks applicants who possess strong planning, organizational and communication skills and who have a record of successfully progressive managerial experience in information management preferably in a higher education technology environment. The Assistant Provost for Information Technology reports to the Provost and Vice President for Academic Affairs and will provide leadership for all aspects of information technology including academic and administrative computing, network services, user support, telecommunications and the computer center. The Assistant Provost will be responsible for budget, personnel, strategic planning and policy development as they relate to information technology. The Assistant Provost will be expected to provide unified direction for the use of technology within the university strategic plan. The Assistant Provost will likewise be expected to provide direction for the effective and efficient application of information technology to education and administration.

The successful applicant must possess excellent interpersonal skills and a commitment to participatory management and team building. Significant experience in integrating information systems, resources, and service in support of academic and administrative functions is required. A record of leadership and management effectiveness, current knowledge of educational technologies, including distributed computing, networking systems, distance learning and software applications will be expected of the successful applicant. A masters degree or an equivalent combination of education and experience is required.

Loyola University New Orleans is located in the historic uptown section of New Orleans. Founded by the Jesuits in 1912, the university is organized around five colleges and schools: the College of Arts and Sciences, the College of Business Administration, the College of Music, City College and the School of Law. The university offers more than 80 fields of study at the baccalaureate and masters levels, and through its School of Law, it offers the Juris Doctor degree. The fall 1995 enrollment was over 5,600 students. The university employs approximately 900 persons including 260 full-time faculty and operates on a budget of 72 million dollars supported in part by an endowment of 220 million dollars.

This position offers a competitive salary as well as an excellent fringe benefit package. Please submit current resume, statement of interest and the names, telephone numbers, and addresses of at least three professional references. Applications and nominations will be considered until the position is filled; however, applicants are encouraged to submit applications by October 4, 1996 for full consideration. Applications, nominations and inquiries should be addressed to:

Dean J. Patrick O'Brien
c/o Office of the Provost
Loyola University
6363 St. Charles Avenue
Campus Box 7
New Orleans, Louisiana 70118

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Sr. Technical Service Specialist

Material Service Corporation, a leading building material producer, has an immediate need for a Sr. Technical Service Specialist in our Data Systems Services Department.

This position requires 3-5+ years experience in Tandem computer system support, and an in-depth knowledge of data communications. Experience with support of LANs, WANs, PC hardware, printers, and modems is required. Also, a working knowledge of popular PC business software is required for the support of end user applications. Good interpersonal skills required.

We offer a competitive salary and an excellent benefit package. Please send resume including salary history to: Material Service Corporation, Human Resources Dept. DSS-CW, 222 N. LaSalle St., Chicago, IL 60601.

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CATIA CAD/CAM Design Engineer wanted to provide training and expertise to personnel on the IBM software package CATIA as a computer aided design, engineering and manufacturing tool for the auto industry; Reqs. 4 yrs. exp. in job offered, or 4 yrs. related exp. as Senior Designer and/or Aerodynamics Engineer; exp. to include use of IBM CATIA software package as a computer aided design tool for the auto and/or aerospace industries. 50 hrs/wk, 7 am - 5 pm; $49,000/yr; Send resume to: 7310 Woodward Ave., Room 415, Detroit, MI 48202, Reference No. 123996. "Employer Paid Ad."

Programmer/Analyst (2 positions) (Milwaukee, SE Wisconsin) Design, develop & implement financial & administrative applications computer systems on IBM mainframes in PL/1 under COBOL II, using DB2 relational database management system in conjunction with MANTIS/SUPRA/SQL tools & utilities. 2 yrs exp in job offered. $45,000/yr. M-F, 9-5, 40 hrs/wk. Two copies of resume to: M. Brooks, File #960277, DWE-ALC, P.O. Box 7972, Madison, WI 53707-7972." Reference file #960277.

Analyze reqs, design and modify info. mgment systems on IBM/MVS/ESA hardware using COBOL II, DB2, CICS, REXX, JCL and QMF. Write program specs and systems docs. Enhance/debug existing systems and programs. M-F; 40 hrs/wk; $60,000/yr. Req. Bach in Comp. Sci., Electronics or Electrical Engineering or Math and 2 yrs. exp. Employer Paid Ad. Send resumes to 7310 Woodward Avenue, Room 415, Detroit, Michigan 48202 Reference No. 120196.

Programmer Analyst: design prototype, build & test specialized value added applications to be used in conjunction with MS window product using Visual Basic; develop, implement & test database using ACCESS; assign s/w design & development using electronic data interchange (EDI), window NT, Novell Netware & SQL (structure Query Language), Visual C++. Req: BS in computer information sys; 6mon exp in job offered or related as programmer, related exp include using EDI, windows NT, Novell Netware, Visual Basic & C++, SQL, Access. 40hr/wk, 8-5pm, $38,000/yr. Send resumes to 7310 Woodward Ave. Rm 415, Detroit, MI 48202. Ref No. 107796. Employer paid ad.

Software Engineer to design, develop & implement business information systems in areas of financial, distribution, material management & banking; database design & development techniques, training & customization of software packages; development, system design, program specification utilizing Oracle, Informix, Unix, Data General Client/Server technology platforms (Informix-4GL, Informix-SQL, Informix-ESQL/C & Shell programming); Reqs. Master's in Computer Science, Computer, Electrical or Electronic Engg., Comp. Info. Systems, Mathematics or equiv. in ed. & exp., 2 yrs exp in job offered or related exp such as Systems Analyst. Related exp must include software design, development, maintenance & implementation & using Informix, Unix & Oracle; $48,000/yr, 40 hrs./wk 8a-5p. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #121996 "Employer Paid Ad"

SOFTWARE ENGINEER to provide specialized consultancy at customer sites in the design, development, implementation, maintenance and support of object-oriented software systems for telecommunications industry applications using C++, RWTools.h++, and Rumbaugh and Booch OO methodologies on a UNIX platform; Conduct cross-platform product development using C++, HP-UX and Solaris; Debug and test software using Purify, XDB, CMVC and HP SoftBench tools. Require: Master's degree in Electrical/Computer Engineering with six months of experience in the job offered. Experience must be in the telecommunications industry. Extensive paid travel (50%) on assignments to client sites within the U.S. is required. Salary: $62,000/year; M-F, 8:00 a.m. to 5:00 p.m. Apply at the Texas Workforce Commission, Dallas, Texas, or send resume to the Texas Workforce Commission, 1117 Trinity, Rm. 424T, Austin TX 78701, JO # TX 7855929. Ad paid by an Equal Opportunity Employer.

Software Developer to plan, develop, test & document computer programs; evaluate user requests, compatibility checking, redesign of specifications, training & technical support to users; install & test programs at user site; design & develop software packages using COBOL, CLIPPER, ORACLE, Dbase, MS-Windows on MS-DOS, UNIX & Novell Netware platforms; Reqs. Bach. in Comp Sci., Computer, Electrical or Electronics Engg., Systems Analysis, Computer Info. Systems, Math or equiv. in ed. & exp., 2 yrs exp in job offered or 2 yrs related exp such as Programmer Analyst, Sr. Programmer, Software Engineer or Consultant. Will accept 3 yrs college ed. plus 3 yrs exp in job offered or related occup in lieu of req'd ed. & exp. Related exp must include software development, design, redesign of specifications, testing & implementation & using Oracle, Dbase, Lotus 123, COBOL, CLIPPER & C on MS-DOS, UNIX & Novell Netware platforms; $42,940/yr, 40 hrs/wk 9a-6p. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #99596 "Employer Paid Ad"

Programmer Analyst (2 openings) - Plan, develop, test and document computer programs, applying knowledge of programming techniques and computer systems; evaluate user request for new or modified programs; determine feasibility, cost and time required compatibility with current system and computer capabilities; consult with user to identify current operating procedures and clarify program objectives; formulate plan outlining steps required to develop program using structured analysis and design; convert project specifications, using flowcharts and diagrams into sequence of detailed instructions and logical steps for coding into language processable by computer. Analysis of clients business requirements, re-engineering, design, development & implementation of applications systems, performance monitoring, tuning for optimization & production support for (on-line/batch) insurance/financial systems using Accumax, IMS DB/DC, CICS, DB2, Xdb, COBOL II, VS/COBOL, MS/COBOL, Easytrive, Rexx, Clist, GMF, SPUFI, MVS/JCL, MVS/VSAM, Fileaid, TSO/ISPF, SDF, Syncsort, Xpediter, Intertest, Access, VSE/Power, VSE/JCL, VSE/VSAM, ISAM & ICCF on IBM 370 (DOS/VSE), IBM 3090 (MVS/ESA), IBM 486 (DOS Windows) environment; also using client/server environment with DB2 utilities; Reqs: Bacheior's in Comp. Science, Systems Analysis, Comp. Information Systems, Comp. Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equivalent in ed. & exp; & 2yrs. exp. in job offered or 2 yrs. exp. in related occup. as a Programmer, Programmer Analyst, Systems Analyst, S/W Engineer, Consultant or Analyst/Programmer; will accept 3 yrs. of college ed. plus 3 yrs. exp. in the job offered or in a related occup. in lieu of the required ed. & exp. Must have some related exp. including development, implementation & performance tuning of a client-server application & using each of the following: IBM 3090, IBM PC, CICS, COBOL II, DB2, TSO/ISPF, MVS/VSAM, SYNCSORT, Access, XDB & ACCUMAX. $47,500/yr., 40 hrs/wk, 8:30a-5p, M-F. Send resumes to 7310 Woodward Ave., Rm. 415, Detroit, MI 48202 with Ref #104596. Employer Paid Ad.

Programmer Analyst - Plan, develop, test and document computer programs, applying knowledge of programming techniques and computer systems; evaluate user requests for new or modified programs to determine feasibility, cost and time required, compatibility with current systems and computer capabilities; consult with users to identify current operating procedures and clarify program objectives; coordinate and perform system integration, structured analysis, design, development, integration testing, data conversion, and implementation and maintenance of on-line and batch oriented applications; develop and implement client-server manufacturing applications with a GUI interface using Oracle 7.0, Visual Basic 4.0 and Access 2.0; study the existing method in use (legacy system) for manufacturing and asset recycling at Xerox; design and implement a client-server application to replace the current system; meet with material planner, buyer, Xerox's internal and external vendors and warehouse supervisors; and provide training and support to the users of the developed system; Reqs: Bachelor's in Computer Science, Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equivalent in ed. and exp.; & 2 yrs. exp. in job offered or 2 yrs. exp. in related occup. as Programmer, Programmer Analyst, Systems Analyst, Software Engineer, Consultant or Research Assistant; will accept 3 yrs. of college ed. plus 3 yrs. exp. in the job offered or in a related occup. in lieu of the required ed. & exp. 6 months of the exp. in the job offered or related occup. must include developing and implementing client-server manufacturing applications with a GUI interface and using Oracle 7.0, Visual Basic 4.0 and Access 2.0. Travel req. to various unanticipated locaSons throughout the U.S. $65,998.40/yr., 40 hrs/wk, 8a-5p, M-F. Send resume to Colorado Department of Labor and Employment, Employment Programs, ATTN: Jim Shimada, Tower 2, Suite 400, 1515 Arapahoe Street, Denver, CO 80202-2117 and refer to order # CO 4493032. Application is by resume only.

Programmer Analyst - Plan, develop, test and document computer programs, applying knowledge of programming techniques and computer systems; evaluate user request for new or modified programs; determine feasibility, cost and time required, compatibility with current system and computer capabilities; consult with user to identify current operating procedures and clarify program objectives; formulate plan outlining steps required to develop program using structured analysis and design; convert project specifications, using flowcharts and diagrams into sequence of detailed instructions and logical steps for coding into language processable by computer; client/server application development, business systems design, GUI prototyping and using SUN Workstation, IBM-PC, Unix, MS-WINDOWS, C, C++, POWERBUILDER 3.0/4.0, SYBASE SQL SERVER, ORACLE 6.0/7.0, TRANSACT-SQL, ISQL, ODBC, DLLS, OLE, SQL*PLUS, PRO*C, MS-WINDOWS, MS-WORD, MS-Excel and Lotus; Reqs: Bachelor's in Computer Science, Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equivalent in ed. & exp. & 2 yrs exp. in the job offered or 2 yrs exp. in related occup. as a Programmer, Programmer Analyst, Systems Analyst, Software Engineer, Consultant, Programmer and Management Consultant or Financial Analyst. Will accept 3 yrs of college ed. plus 3 yrs exp. in the job offered in lieu of the required ed. and exp. 1 year of the exp. in the job offered or related occup. must include design and development of applications and using SYBASE SQL SERVER, POWERBUILDER, C, MS-WINDOWS and UNIX. 45,000 yr., 40 hrs/wk, 8:30a-5p, M-F. Send resume to 7310 Woodward Avenue, Room 415, Detroit, MI 48212. Include Ref# 117096. Employer Paid Ad.

Senior Software Development Engineer - Analysis, design, development & debugging new s/w or enhancements to existing s/w; work with technical staff to understand problems with s/w & develop specifications to resolve them; resolve customer complaints with s/w & respond to suggestions for improvement & enhancements; develop s/w user manuals; act as a team leader on projects; lead seminars & demonstrate s/w; assist in training less experienced s/w development staff; & use Tandem Cyclon/VLX, COBOL85, NonStop SQL,TAL, TACL, C & Pathway; Reqs: Bachelor's in Comp. Science, Systems Analysis, Comp. Information Systems, Comp. Engineering, Mathematics or its equivalent. in ed. & exp.; & 2 yrs. exp, in job offered or 2 yrs. exp. in related occup. as Programmer, Programmer Analyst, Systems Analyst, S/W Engineer, Consultant, Sr. Systems Engineer, Scientist-SD (Sr. Systems Analyst) or Analyst; Will accept 3 yrs. of college ed. plus 3 yr. exp. in the job offered or in a related occup. in lieu of the required ed. & exp. The 2 yrs. exp. in the job offered or related occup. must include analysis, design, development & using each of the following: Tandem Cyclone/VLX, COBOL 85, NonStop SQL, TAL, TACL, C & Pathway. $55,000/yr, 40hrs/wk, 8a-5p, M-F. Travel to various unanticipated locations throughout the U.S. Employer will reimburse work-related travel expenses validated by receipts. Send resumes to 7310 Woodward Ave., Rm. 415, Detroit, MI 48202 with Ref #111096.

Computer Programmer. Write/code/debug/test/impl business appl & network interface SW for comm btn remote appls on different systems like mainfr, AS/400, IBM PS/2, CI Server platforms using TCP/IP/C++/COBOL/Synon/Unix, develop/maint dbs under X-Windows/WindowNT/CI Server planforms for db maint in Oracle or MS environment. Req Bach or equiv foreign degree in ComSci or rel'd fields w/2yr exp in job offered & 6mos exp in C++/Synon/mainfr/AS/400/TCP/IP/CI Server platforms. Exp may have been gained concurrently. 40hr/wk, $45,780/yr. Send cover letter/resume to B.Abraham, #6-202, MDES, 390 N Robert St., St. Paul, MN 55101. Employment Authorization req'd.

WANTED - PROGRAMMER ANALYST - Plan, develop, test & document comp. programs, applying knowledge of programming techniques & comp. systems; evaluate user request for new or modified program, determine feasibilities, cost & time req'd compatibility with current sys. & comp. capabilities; consult with user to identify current operating procedures & clarify program objectives; formulate plan outlining steps req'd to develop program using structured analysis & design; convert project specifications using flowcharts & diagrams into sequence of detailed instructions & logical steps for coding into language processable by comp. Duties include design, development, implementation, installation support and using DOS, UNIX, NETWARE, Oracle 7.0, DBLink, SQL*Menu, SQL*Reportwriter, SQL*Forms, Pro*C, Oracle CASE, SQL*Net and VAX II. Reqs. Bach. in Comp. Sci., Systems Analysis, Comp. Infor. Systems, Computer Engg., Electrical Engg., Electronic Engg., Mathematics or its equiv. in ed. & exp. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Programmer Analyst, Sys. Analyst, Software Engr., Consultant, Software Consultant or System Analyst Associate. Will accept 3 yrs. of college ed. plus 3 yrs. exp. in the lob offered or in a related occup. in lieu of the req'd ed. & exp. 6 months of the experience in the job offered or related occupation must include design, development, implementation and using each of the following: DOS, UNIX, NETWARE, Oracle 7, DBLink, SQL*Menu, SQL* Reportwriter, SQL*Forms, Pro*C and Oracle CASE. $65,000.00/yr., 40 hrs/wk., 8a-5p, M.F. Send resumes to 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Reference No. 114196. Employer Paid Ad

Programmer Analyst - Plan, develop, test & document computer programs applying knowledge of programming techniques & computer systems; evaluate user request for new or modified programs; determine feasibility, cost & time required, compatibility with current system & computer capabilities; consult with user to identify current operating procedures & clarify program objectives; formulate plan outlining steps required to develop program using structured analysis & design; convert project specifications, using flowcharts & diagrams, into sequence of detailed instructions & logical steps for coding into language processable by computer; develop client-server applications using IBM ES9000, MVS/ESA, UNIX, TELON, DB2, Sybase, Visual Basic, VS-COBOL II & C. Reqs: Bachelor's in Computer Science, Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equivalent in ed. & exp. & 2 yrs. exp. in the job offered or 2 yrs. in related occup. as a Programmer, Programmer Analyst, Systems Analyst, Computer Programmer, Software Engineer, Contract Analyst Programmer or Consultant. Will accept 3 yrs. of college ed. plus 3 yrs. exp. in the job offered in lieu of the req. ed. & exp. 6 mts. of the exp. in the job offered or related occup. must include developing client-server applications & using each of the following: IBM ES9000, DB2, MVS/ESA, Visual Basic, VS-COBOL II, TELON & C. $49,000/yr., 40 hrs/wk, 8a-5p, M-F. Please send resume to 7310 Woodward Avenue, Room 415, Detroit, MI 48212. Include Ref# 104796. Employer Paid Ad.

TECHNICAL SERVICE MANAGER: Oversee and direct the design, implementation and maintenance of multi-layer and multi-protocol networks including Unix, WindowsNT, Novell Network and Windows 95; oversee and direct personnel working on computers; troubleshoot network systems and communications softwares; interface with clients to adapt systems to their needs; maintain quality control and quality of services; PC board level troubleshooting with computers, monitors and printers. Master's degree in Telecommunications Engineering or Computer Science and 1 yr. exp. in job offered or as Network/System Engineer required. Salary $32,000/yr. Apply at the Texas Employment Commission, Houston, Texas, or send resume to 1117 Trinity, Room 424T. Austin, Texas 78701, J.O. #TX7855850. Ad paid by an Equal Opportunity Employer.

ATTEND

New England CORPORATE TECHNICAL RECRUITING CONFERENCE — COMPUTERWORLD

Computerworld's New England Corporate Technical Recruiting Conference!

Monday, October 7, 1996

Boston Marriott Burlington, Burlington, Massachusetts

On October 7, 1996, you have a special opportunity to update your recruiting skills and network with recruiters in your area at the second annual New England Corporate Technical Recruiting Conference, held at the Boston Marriott Burlington, Burlington, Massachusetts.

A Full Schedule of Contemporary Topics

7:30am **Continental Breakfast & Conference Registration**

8:15am **Concurrent Sessions:**
- **The Critical Importance of Soft Skills and the "Invisible Assembly Line"**
  Karen W. Stanley, Vice President of Development, Priority Management Systems, Inc.
- **The Internet Primer: What is the Internet?**
  Martha Stone-Martin, President, Linkwell Services

9:40am **Proactive Recruitment Techniques**
Dave Drugman, President, Bay Cities Research, Inc.

12:15pm **Luncheon Keynote:**
Coping with Technology: Help for the Paradigm Shifted
Maryfran Johnson, Executive Editor, Computerworld

2:30pm **Concurrent Sessions:**
- **The Critical Importance of Soft Skills and the "Invisible Assembly Line" (repeat)**
- **The Recruiter's Guide to the Internet**
  Ginay Pinzer, Human Resources Consultant

4:15pm **Town Hall Forum**
Jack Erdlen, Vice President, Strategic Outsourcing - Romac International

6:00p.m **Program ends**

Selected sessions include:

Proactive Recruitment Techniques
Dave Drugman, President, Bay Cities Research, Inc.
To remain competitive, today's technical recruiters need to be aware of the latest trends in sourcing and proactive recruiting. This in-depth session from a leading expert will explore this critical topic and will help you put your resources and expectations into proper perspective.

Industry Trends
Luncheon/Keynote Address
Maryfran Johnson, Executive Editor, Computerworld
Sure, there are new skills entering the market every day, but what are the trends that drive these skills? Maryfran Johnson, one of the industry's leading watchers of the Information Systems profession will give you an up-to-the-minute view in this very special keynote address.

Town Hall Forum
Jack Erdlen, Vice President,
Strategic Outsourcing - Romac International
In this session, you'll not only be able to propose your specific questions for open discussion, you'll learn of real world issues and solutions from your peers. You won't want to miss this rare opportunity as Jack Erdlen, an expert in the HR field, leads us through this modern discussion of your recruiting topics.

For more information, call the conference hotline:
1-800-488-9204

Computers

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VSA, Inc., the nation's leader in vending food distribution, is expanding its Information Technology Department located in our downtown Denver office. We are a dynamic and complex multi-AS/400 Novell environment utilizing RPG and LANSA to operate our business applications. VSA utilizes frame relay technology to connect 32 distribution locations with a centralized data center.

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- Network Engineer
- Telecommunication Engineer
- Novell CNE
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- Applications Programmer
- Microsystems Specialist

Candidates must be strong team players who possess:

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We offer a competitive compensation and benefits package including:

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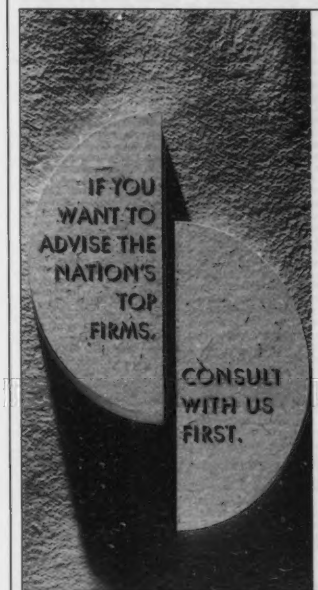
EOE M/F/D/V



The facts speak for themselves: Five hundred clients. Eighteen offices in the US and one in the UK. Over 3,000 technology consultants and still growing. Our broad client base and many locations gives us the foundation that allows us to offer *you* diverse assignments - diverse enough to fit your expertise and lifestyle. Check out our website for more information.

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In the competitive realm of telecommunications, technological innovation is key. As the 4th largest long distance carrier, **LDDS WorldCom** is pushing the boundaries of technology. We provide domestic and international voice, data, and video telecommunications services over our own state-of-the-art digital fiber-optic nationwide network. Through continuing exploration of technology's leading edge, we're undergoing significant growth, all of which enables us to provide:

- **pioneering technology**
- **upward mobility**
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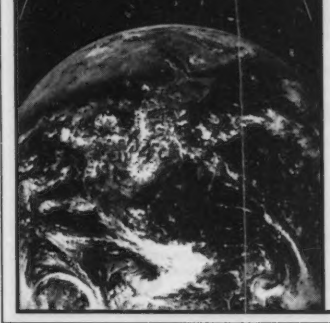
Join us as we launch 21st century technology.



IS MANAGEMENT

- **Manager, Invoice Interfaces**
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- **Manager, Cross DMS Team Projects & Coordination**
- **Manager, Customer Interfaces**
- **Manager, Order Administration**

Along with excellent communication and presentation skills, all IS Management positions require a BS in Engineering, Computer Science, or Business Administration, MS a plus, and substantial experience in mission-critical project management and systems planning. Telecommunications industry experience a plus.

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- **Network Administrators (Novell 4.x)**
- **DBAs (Sybase, Oracle)**
- **Systems Operators**
- **Quality Assurance Analysts**
- **Revenue Services Technical Analysts**

Positions are available in a wide variety of locations, primarily **Tulsa, OK** and **Jackson, MS.** Please submit your resume, indicating position of interest and geographic preference, to: **LDDS WorldCom Inc., Dept. AM-COM, 6929 North Lakewood Ave., MD #3.2-211B, Tulsa, OK 74117.** Fax: **(918) 590-2372.** E-mail: **IS_recruit@wcom.com.**

LDDS WORLDCOM

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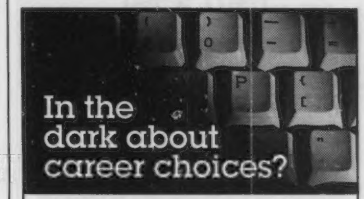

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Responsibilities include analysis, design, development and implementation of systems that support business processes and on air production functions. Requirements include Bachelors in Business, Computer Science or equivalent experience. Hands on experience with **ORACLE Developer 2000. Ad# 1028**

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Responsible for the evaluation, implementation and administration of hardware/software based security products including UNIX and NT/AS servers. Requirements include a minimum of 3 years in-depth experience with computer/network security issues, UNIX, TCP/IP systems, knowledge of Internet proxy Firewalls and a minimum of one year managing projects. **Ad# 1029**

ESPN offers a competitive benefits package, in addition to a stimulating work environment. Qualified candidates should send resume to: **ESPN, Inc., Ad#___, ESPN Plaza, Bristol, CT 06010-7454, Fax: 860-585-2425 or email: jonesj@espn.com (unencrypted and nonmimed).** No phone calls please.

Equal Opportunity Employer M/F/D/V

ESPN

INSTITUTIONAL DATA ADMINISTRATOR

Duke University invites applications and nominations for the newly created position of Institutional Data Administrator. The Institutional Data Administrator will be a senior staff member in the Office of Information Technology (OIT) and will work closely with the Vice Provost for Information Technology and other senior OIT leadership to develop and implement plans to meet the University's strategic institutional data needs.

This will be OIT's highest level position for dealing with institutional data issues. As such, the person holding this position will lead the OIT Data Administration group's work with leaders in functional areas to make sure their data needs are met, particularly during the University's current "work process redesign" efforts which provide a unique opportunity to restructure and rationalize institutional data relationships.

As part of his or her responsibilities, the Institutional Data Administrator will design and implement a data architecture that allows administrative systems to share data readily as needed; develop a support strategy for appropriate access to institutional data using a variety of tools; and provide leadership in the development and maintenance of standards for data security in a networked and highly heterogeneous technological environment. He or she will also oversee the development and maintenance of key information on institutional data, create standards for documenting such information, and design ways to implement these standards in the context of a distributed data environment.

The successful candidate will display vision and expertise in developing a cross-functional institutional data warehouse and data model; strong technical background in database design; significant experience in enterprise application development; have proven management ability and leadership experience at the institutional level; and will understand effective communication within the higher education environment. A four-year degree in a related field is expected.

Review of applications will begin immediately and will continue until the position is filled. Interested individuals should send a cover letter, resume and addresses of three references to: **Institutional Data Administrator Search Committee, P.O. Box 90138, Duke University, Durham, NC 27708.**

Duke University

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Application Technical Specialists are senior PowerBuilder experts with good people skills, ability to lead a project and ability to travel. College degree in business, accounting or manufacturing or computer science along with CPIM or CPA is preferred.

Application Consulting Specialists are experienced and trained professionals working closely with our clients as our implementation teams to ensure that all of the clients application requirements are met. Project management or prior implementation exp. is strongly desired along with appropriate degree and/or certification.

While relocation will not be necessary, there may be times when extensive travel is required.

Forward resumé w/ salary history to:

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New Jersey	201-242-4166
Texas	214-691-3420
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Project Manager, 40 hrs/wk, 8:30am-5:30pm, $42,000/yr. Manage projects related to relational database management systems in a client/server development environment. Lead projects in systems analysis, design & training. Perform database & application design. Install databases. Administer systems, networks & databases. Front-end design. Manage unit & integration testing. Oversee preparation of user documentation. Tools: Oracle; Sybase; SQL*Server; CASE; UNIX; C; Visual Basic; PowerBuilder; Uniface; Borland Delphi; MS-Access; Multimedia. Bachelor's degree in Computer Science or Electronics Engineering as well as 2 yrs exp. in job offered or as Systems Analyst required. Prior exp. must include: C; UNIX; SQL & tools; CASE tools; database administration, analysis & design; Oracle. Must have proof of legal authority to work permanently in the U.S. Send two copies of both resume and cover letter to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, IL 60605, Attention: Ruth Daniels, Reference #V-IL-15050-R. NO CALLS. An Employer Paid Ad.

LOTUS NOTES

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Programmer Analyst; 40 hrs/wk 8-5; $42,000/yr. Develop engineering programs and procedures using Oracle RDBMS tools such as SQL*Plus, SQL*Forms, SQL* Menu, PL/SQL, SQL*ReportWriter and Pro*C under UNIX. Design software systems under the relational database management environment including memory management, network system library function calls and efficient algorithm implementation for information management. Make enhancements to existing systems based on end user's requirements. Convert existing forms from 3.0 to 4.5 [GUI]. Redesign, develop and maintain systems such as scheduling, materials management, medical & payroll. Confer with engineering & technical support personnel to resolve inaccuracy or feasibility problems. Min Reqs: MS in Engineering or Computer Science. Past development of a timesheet system using SQL* Forms 4.5 & SQL*ReportWriter 2.5 under ORACLE RDBMS. Past development of a project management system using SQL*Forms 4.5 under ORACLE RDBMS. Apply at the Texas Workforce Commission, Dallas, Texas, or send resumé to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701, JO#TX7855063. Ad Paid by an Equal Opportunity Employer. Multiple positions open.

PROGRAMMER ANALYST required. Perform Business Area Analysis, Information Systems Design & Client Requirements capture through structured interviewing techniques & user interaction. Provide project specifications, project leadership & quality assurance for projects. Develop logical & physical data models, build relational databases using SQL & related relational database tools including FoxPro. Design GUI's using Visual Basic & develop new software on networked MS DOS & Windows/Windows NT platforms using structured programming & design methodologies. Bachelors Degree or its equivalent required in Math, Computers, or Engineering, plus 2 years experience in the job duties described above. University project work (other than mere classroom study) may be used to satisfy the experience requirements. Must have proof of legal authority to work in the U.S. Salary-$36,000/year for a 40 hour work week. Apply at the Texas Workforce Commission, Dallas, Texas, or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701. J.O. #TX7855849. Ad paid by an Equal Opportunity Employer.

SOFTWARE ENGINEER: (2 positions) 40 hrs./wk., 8am-5pm, $55,600/yr. Carry out the design and development of software application systems, preparation of program specifications and internal design, development of test plans and test cases on IBM hardware utilizing CICS, IMS and COBOL. Reqr. Bachelor's degr. in Computer Science, Electrical or Mechanical Engrng. and 4 yrs. expr. in job offered or 4 yrs. expr. in Systems Analysis &/or S/W Engineering &/or Programming &/or Computer Consulting. Reqr. one year of work experience on IBM computers and with CICS, IMS and COBOL. Employer is S/W development/consulting firm. Relocation to client sites throughout the U.S. for periods of 6 mos. to 2 yrs. required. "Employer paid ad". E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref #95396.

SYSTEMS ANALYST/PROGRAMMER - Analyze, design, develop, test, debug, document & implement proprietary software applications utilizing embedded programming. Customize client requirements incl integration with existing systems, migration & conversion. Req 4 yrs exp in job or related EDP occupation. Exp must incl ORACLE 7 RDBMS with ORACLE CASE METHODS (entire life cycle), Prototyping techniques, Data & Functional Modeling, Network Design in Distributed Multi-user System with Fragmentation & Replication. $46,113/yr. 40hrs/wk. 8:00am-5:00pm. Job Site: Charlotte, NC. Send resume with Social Security # to Job Service, 500 W. Trade Street, Charlotte, NC 28202. Attn.: Job Order #NC2661120, DOT Code 030.167-014.

Programmer/Analyst needed for computer consulting firm located in Duluth, Georgia. Job duties include: Software consulting on various in-house projects and/or contract basis throughout the United States. Design and develop a variety software applications on a variety of business and industry applications and re-engineer software applications using state-of-the-art tools and techniques. Use Visual Basic, Windows, NT, Borland C++, Rasima Object Manager, Visual C++, MS SQL Server, LAN Manager, UNIX, MS-DOS and Windows. Applicant must have a B.S. degree in Computer Science. Applicant must also have 2 yrs. exp. in the job duties described above or 2 yrs. exp. as a Programmer/Analyst which must include 2 yrs. exp. in design and development of software applications on a variety of business and industry applications and 1 yr. exp. with Visual Basic, Visual C++, MS SQL Server, LAN Manager, and UNIX. 40hrs/wk, 8:00 am - 5:00 pm, Mon-Fri, $46,000/yr. Apply in person or send 2 resumes to: Georgia Department of Labor, Job Order #GA 6017600, 1535 Atkinson Road, Lawrenceville, GA 30243-5601 or the nearest Department of Labor Field Service Office.

Systems Developer II for nonprofit, private research organization. Duties include: Performing GIS (Geographic Information System) analysis and mapping for environmental data using ARC/INFO and ARCVIEW software packages. Designing Graphic user Interfaces (GUI) using UIM/X GUI builder, Motif and X11 library and AML; Network programming (Client/Server) in C/C++ using TCP/IP protocols; Graphic programming using Agx, SRGP, SPHIC software packages; Implementing databases for metadata and programming in AML, Perl to import, export, and extract data. Also making internet homepages using HTML, Java and CGI. Requires a Masters Degree in Computer Science. Requires one year experience in the job offered or one year experience as a Systems Analyst to include experience in the following: -GIS (Geographic Information Systems) including ARC/INFO; UNIX; C/C++, and Network Programming (TCP/IP protocols). Salary is $40,945.00 per year. Hours are 8:00 am to 5:00 pm, forty per week. Send resume to 7310 Woodward, Room 415, Detroit, MI 48202. Ref. #103096. Employer paid ad.

Software Engineer: Build & enhance our core business apps using C++, NT, SQL server, Win95, Sybase, Unix & WFWG infrastructure. **Req:** M.S. in CS or Engg. or equivalent with one yr. related exp. Coursework must include OOP, Database Theory, Distributed Database Analysis, Comp. Networks & Data Structures. Must have Exp. in Object-Oriented tech., GUI tools, RDBMS such as ORACLE/ SYBASE/SQL SERVER, client-server tech. and Windows Prog. Exp. in Sed, Awk, SCCS, RCS, PVCS, makefiles, SQL, PL/SQL, Report Writing & Batch Prog. Salary: 41000/yr. with attractive benefit package. Hrs: 8a-5p, 40hr/wk. Should be willing to travel. Proficiency in English a must. Resume to: Dept. of Labor/ Bureau of Operations, 1320 EXEC. CTR. DR., ATKINS RM 144, TALLAHASSEE, FL 32399-0667. Re: Job# FL-1486583.

SYSTEMS/ANALYST to provide system and database administration; implement and maintain database applications and provide technical support. Utilize DB2/6000, Shell Scripts, PL/SQL, C/C++ and Oracle. Requirements include: bachelor's degree in Computer Science, Engineering or Math. Two years experience as Software Engineer and/or Programmer and/or Research Assistant. Experience listed must include one year using DB2/6000, Shell Scripts, PL/SQL, C/C++ and Oracle 7.0. 40hrs/wk. (8a.m. - 5p.m., M-F), $34,000/yr. Send along with your resume your Social Security number and the Job Order number NC3060402 and DOT code 303.167-014 to: Job Services, 1105 Briggs Avenue, Durham, NC 27703 or apply to nearest Job Service office.

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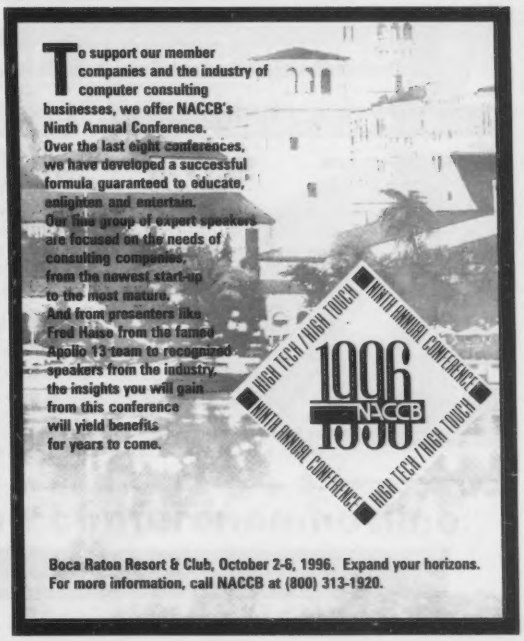

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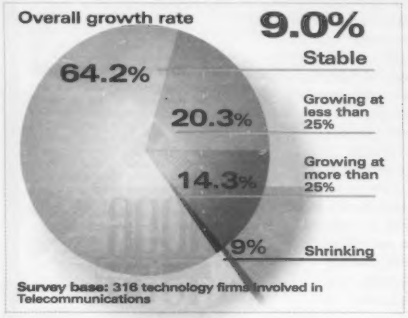
Career Survey: Telecommunications

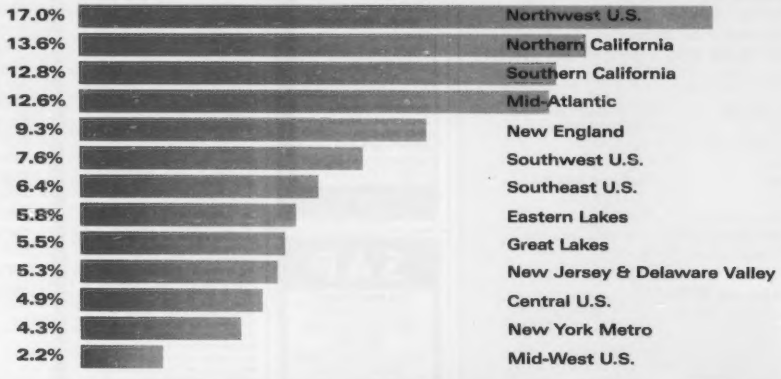
Industry Hiring Trends



Survey base: 316 technology firms involved in Telecommunications

Survey conducted between July '96 and Sept '96;

Regional Growth Analysis



CorpTech, a directory publisher in Woburn, Mass., tracks the U.S. 45,000+ technology manufacturers. This survey relates to the 31,439 tracked firms with fewer than 1,000 employees.

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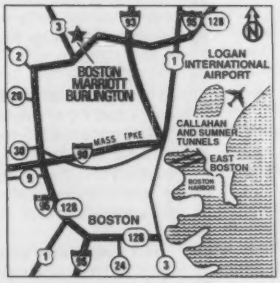

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7:30am **Continental Breakfast & Conference Registration**

8:15am **Concurrent Sessions:**
- **The Critical Importance of Soft Skills and the "Invisible Assembly Line"**
  Karen W. Stanley, Vice President of Development, Priority Management Systems, Inc.
- **The Internet Primer: What is the Internet?**
  Martha Stone-Martin, President, Linkwell Services

9:40am **Proactive Recruitment Techniques**
Dave Drugman, President, Bay Cities Research, Inc.

12:15pm **Luncheon Keynote:**
Coping with Technology: Help for the Paradigm Shifted
Maryfran Johnson, Executive Editor, Computerworld

2:30pm **Concurrent Sessions:**
- **The Critical Importance of Soft Skills and the "Invisible Assembly Line" (repeat)**
- **The Recruiter's Guide to the Internet**
  Ginay Pinzer, Human Resources Consultant

4:15pm **Town Hall Forum**
Jack Erdlen, Vice President, Strategic Outsourcing - Romac International

6:00p.m **Program ends**

Selected sessions include:

Proactive Recruitment Techniques

Dave Drugman, President, Bay Cities Research, Inc.

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Industry Trends
Luncheon/Keynote Address

Maryfran Johnson, Executive Editor, Computerworld

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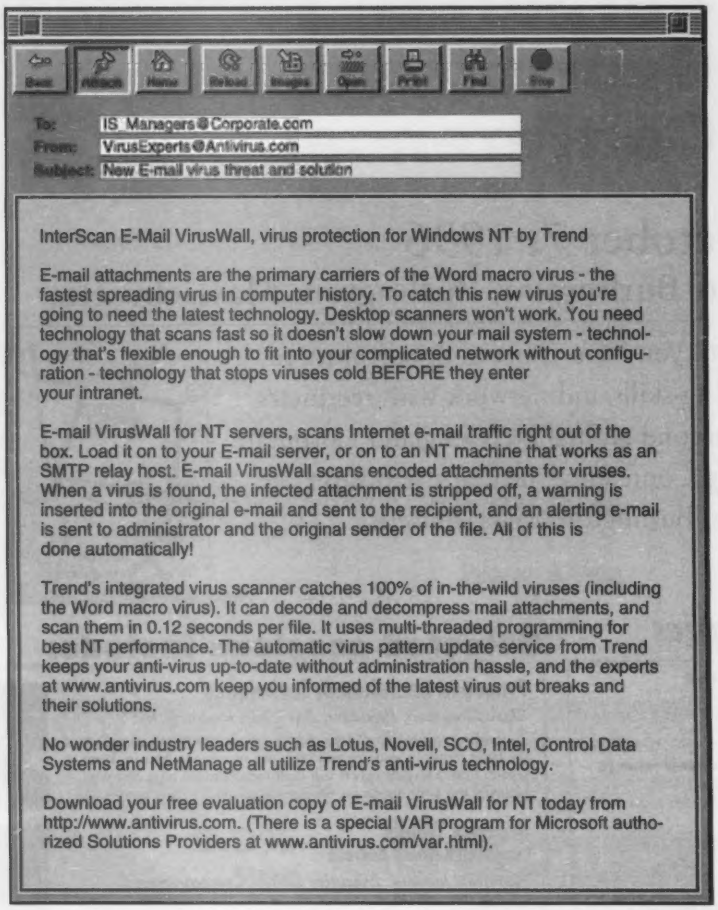

InterScan E-Mail VirusWall, virus protection for Windows NT by Trend

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PC Week Labs
July 18, 1996

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Marketplace

THE ECONOMICS OF ERGONOMICS

By Amy Malloy

Creating an ergonomically correct office isn't a one-step process. A company must decide who's in charge, figure out what to buy and offer proper training.

Companies can't just drop employees into workstations. How office workers interact with equipment plays a crucial role in how well and comfortably they do their jobs. That's where ergonomics comes in; it's an applied science that focuses on user/equipment interaction.

Some experts suggest dedicating a team of employees to ergonomics. "The team should consist of someone from IS, someone from HR, someone from facilities as well as someone who deals with expenditures of money," says Marilyn Joyce, director of The Joyce Institute, a consultancy and unit of Arthur D. Little, Inc. in Seattle.

Key player

No matter who makes up this team or how it's handled, everyone agrees that information systems should play a role. "There should be a marriage between IS and facilities. In many organizations, they are not even dating. In many cases, they don't even know each other," says Bob Bettendorf, president of the Institute for Office Ergonomics in Manchester, Vt.

Others agree. "We would like [IS] to be more involved, at least to know what they are up to," says Bradley Joseph, corporate ergonomist at Ford Motor Co. in Dearborn, Mich.

Each department brings a different perspective. Facilities staffers think of the building, lighting, chairs and desks, while human resources is concerned with the employees' overall well-being. And, naturally, IS cares about the technology. Together, this team creates a complete picture of the company and its needs.

A team of employees might seem extreme or costly to some companies, but it doesn't have to be a permanent fixture. "Teams could be together for a day," Joseph says.

Departments need to communicate or companies will waste money on inefficient, inappropriate purchases.

For instance, if IS is going to upgrade monitors from 15 inches to 21 inches, the facilities department needs to know. Employees might need larger desks or keyboard trays. If the desks are narrow, larger monitors may not fit, and upgrades could cost hundreds of dollars per workstation, Bettendorf says. A company may choose to add keyboard trays instead, but those can cost up to $200 each, he adds.

If a company decides to add keyboard trays, there must be room on them for mice. "You can't have a keyboard on a tray and a mouse on a desk," Joyce says.

Time to shop

The next step is deciding what to buy. Experts recommend setting up a lending library with a stock of frequently requested ergonomically designed equipment that employees can test. This can help companies avoid making unnecessary purchases. Chairs, keyboards, wrist rests, monitor stands and foot rests are recommended library items.

Purchases such as monitors and furniture require planning. The facilities department needs to know the technological direction of the company.

"If the IS people put together a future direction statement, when the facilities people make a furniture buy, they can do it intelligently," Bettendorf says.

Equipment isn't always the culprit. Sometimes an employee isn't using it properly, and a few minor adjustments, such as correcting posture or changing the position of the screen, rectify the problem. "Most of what needs to be done has to do with workers and managers knowing how to use existing equipment," Joyce says.

If the company educates employees about the right way to sit and use equipment, comfort levels should improve. "There is a significant research movement saying many problems can be addressed by teaching the person how to sit properly," says Michael Gauf, managing editor of "CTD News" in Horsham, Pa. "CTD News" is a monthly newsletter that focuses on cumulative trauma disorders and related issues.

The most common problems Bettendorf sees users having are headaches and tired eyes, which can be solved with proper lighting, and shoulder and head pain, which often can be solved by adjusting monitors.

"People can be trained not to pound the keys too hard or grab the mouse like it's going to scurry off the desk," Joyce says. ■

Malloy is *Computerworld*'s assistant researcher.

WEB SITES

CTD News: ctdnews.com
ErgoWeb: tucker.mech.utah.edu
Human Factors and Ergonomics Society: hfes.org/HFES/HFES.html

BUYER BEWARE

Those versed in the dos and don'ts of ergonomics have some advice for those buying equipment that claims to reduce computer-related injuries.

"Most of the so-called ergonomic equipment is really being sold without the benefit of any research that confirms its efficacy. I would look at all claims with a very jaundiced eye," says Bob Bettendorf, president of the Institute for Office Ergonomics.

Those buying equipment should watch out for products that manufacturers say will prevent or cure computer-related injuries. "There are no guarantees. There are so many variables. A manufacturer would be taking on an enormous liability to say that a particular product would solve problems," says Marilyn Joyce, director of The Joyce Institute.

"Don't blindly accept that new equipment will solve the problem," says Michael Gauf, managing editor of "CTD News." "This is very much a buyer-beware market. You need to ask for the research, for the proof." — *Amy Malloy*

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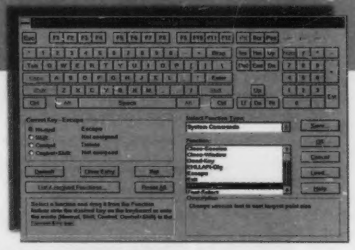

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Good news from Intel boosts sector, 127

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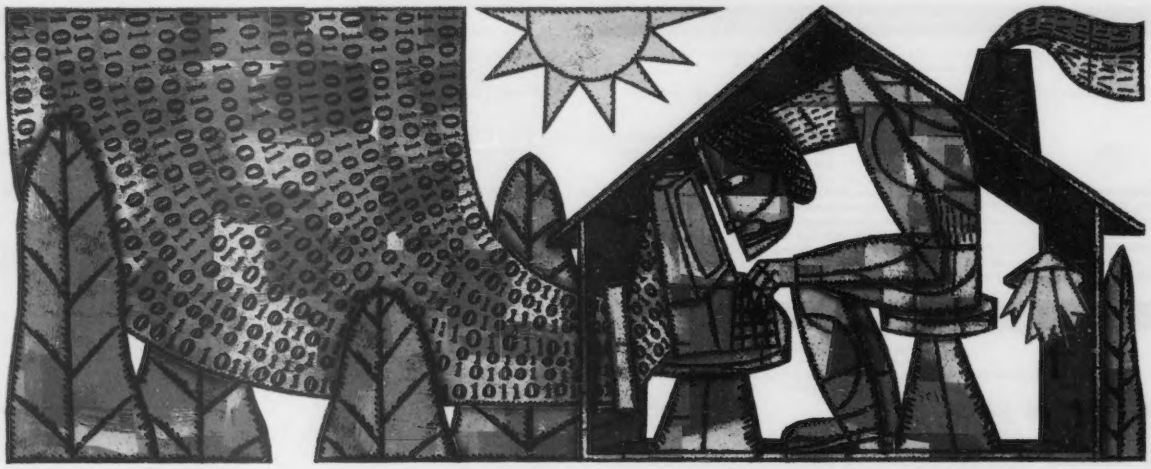

RICHARD DOWNS ILLUSTRATIONS

Bringing home the data

By Rosemary Cafasso

Cable modems. Now there's a technology that sounds like a snoozer.

But do yourself a favor and take another look. These little gizmos, which work with existing cable networks, have the potential to get information off the Internet and into the hands of users far more quickly than today's dial-up modems.

Because these devices work with high-capacity cable pipelines instead of phone lines, these modems can transmit data at millions of bits per second. That means it would take just minutes to transmit a full-motion video with a cable modem instead of the hours it would take with current dial-up modems.

"With the Internet and the insatiable demand for more speed, there's really a compelling reason for this technology," says Gary Schultz, president of Multimedia Research Group, Inc. in Sunnyvale, Calif.

Wall Street analysts recommend that investors investigate this emerging market. While throwing your money at cable modem players isn't such a sound idea — the market is still too young and volatile — analysts say cable modems have the potential to be big winners.

Current cable modems in early release are clocking in at 4M bit/sec., and some manufacturers are working on units that would run up in the 30M to 40M bit/sec. range. By contrast, today's typical PC modems send data at 14.4K bit/sec. or 28.8K bit/sec.

"This isn't like a 'Buy Microsoft' situation," says James Magid, a senior advisor at Needham & Co. in New York. "Investors have to realize this [market] is still over the horizon. To be sure that they don't get into trouble, [investors] need to look to a company that is already strong in related areas."

Currently, several major computer and component manufacturers are producing cable modems, including Motorola, Inc., Hewlett-Packard Co., Zenith Electronics Corp., General Instrument Corp. and Lancity Corp.

In addition, many of the big cable operators, including Time Warner Cable and Tele-Communications, Inc., are deploying the technology.

While cable modem technology is aimed at residential customers, it isn't exclusively a consumer product. Zenith Electronics, for example, has a project under way using its cable modems to deliver high-speed performance networks that link physicians in Alabama to Huntsville Hospital in Huntsville, Ala.

Of course, promising technologies have fizzled before, and cable modems face some serious hurdles. For starters, they are part of a highly competitive market in which the cable operators and phone companies are struggling to provide new information delivery vehicles to the home. Both groups are either deploying or developing an array of technologies to do battle, from Integrated Services Digital Network to wireless modems, satellites and digital TV.

Further, the success of cable modems greatly depends on the ability of cable operators to upgrade their existing cable networks. Not all analysts are convinced this will happen quickly.

"The question is, what kind of an investment will the cable companies make," says Robert Gutenstein, a director of research at Kalb, Voorhis & Co. in New York. "They like to talk about new technology, but they have been slow to change."

The bulk of cable installed today was designed for one-way communications, which has consisted of video downloads to television sets. In addition, there can be extraneous noise on cable lines that is picked up from a number of sources, even ordinary household appliances, which could interfere with two-way communications. To achieve two-way and higher-quality communications, cable operators are now upgrading their coaxial cable lines to a new hybrid fiber-coaxial cable system.

About 10% to 20% of today's cable networks have been upgraded, according to industry analysts.

Travel time

Data	Modem Type: Dial-up modem, 14.4K bit/sec.	Modem Type: Cable modem, 4M bit/sec.
Simple image 2M bits	2.3 minutes	0.5 seconds
Complex image 16M bits	18.5 minutes	4 seconds
Short video 72M bits	1.4 hours	18 seconds
Long video 4.3G bits	3.5 days	18 minutes

Source: Forrester Research, Inc., Cambridge, Mass.

The Week in Stocks

Gainers

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Netscape Comm. Corp.	31.6
Iomega Corp.	30.8
PSINet	24.4
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Microsoft Corp.(H)	8.19
Forte Software	7.25
Ascend Communications	7.06

Losers

PERCENT

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Comshare Inc.	-17.2
Edify Corp.	-15.6
MathSoft	-14.3
New Dimension Software Ltd.	-12.5
Corel Corp.	-11.0
ViewLogic Systems	-10.4
Cambex Corp.	-9.1

DOLLAR

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Micrografx Inc.	-2.38
Brooktrout Technology(H)	-1.75
BMC Software Inc.(H)	-1.38
ViewLogic Systems	-1.31
Open Market Inc.	-1.25

Industry Almanac

Intel may ascend alone

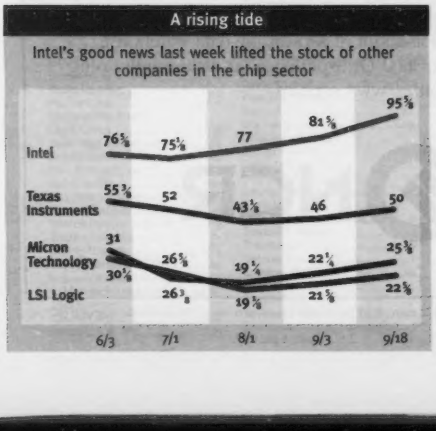
After industry juggernaut **Intel Corp. (Nasdaq:INTC)** reported last week that its third-quarter semiconductor sales were stronger than expected, the company's stock price leaped more than 5% in one day's trading. Other stocks in the chip sector quickly followed the leader and rose on Intel's coattails.

But good news for Intel doesn't necessarily translate to good news for other chip makers such as **Micron Technology (NYSE:MU)**, **LSI Logic Corp. (NYSE:LSI)** and **Texas Instruments, Inc. (NYSE:TXN)**; they still feel the effects of the past year's overabundance of memory chips and very tight pricing margins.

"Intel's in a unique situation in this sector," says Doug Makin, an analyst at Grunthal & Co. in New York. "Although they are a catalyst and bellwether for the sector, you can't just assume that Intel's good news translates to good news for everybody else."

Intel's new pricing policy is one example of what the company can do that others in the sector can't. The Santa Clara, Calif., company in August said it won't change its prices until February. This would allow OEMs to place orders for Intel CPUs now instead of waiting until after the usual November pricing changes. Other companies can't control their prices as efficiently as Intel, Makin says, and they can't make the same assurances.

Even strong PC and laptop sales in the upcoming months may not translate to great news for some of the chip makers that were buoyed by Intel's good news. Analysts warned that several other chip companies could show poor quarterly results this fall. — *Stewart Deck*



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T	62.88	49.25	AT&T	56.88 1.50 2.7
ASND	71.25	16.50	Ascend Communications	64.00 7.06 12.4
BNYN	13.63	5.13	Banyan Systems Inc.	5.50 -0.38 -6.4
BAY	50.00	20.25	Bay Networks Inc.	29.13 2.75 10.4
BEL	80.38	43.50	Bell Atlantic Corp.	58.38 -0.88 -1.5
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CS	87.75	53.00	Cabletron Systems	69.50 6.50 10.3
CSCC	81.00	14.00	Cascade Communications (H)	81.00 4.63 6.1
CGRM	85.13	12.75	Centigram Communications	15.94 0.06 0.4
CSCO	61.13	30.50	Cisco Systems Inc. (H)	61.06 3.19 5.5
CLIX	9.25	4.50	Compression Labs Inc.	6.50 -0.50 -7.1
CMNT	10.50	4.00	Computer Network Tech.	5.63 -0.13 -2.2
XCOM	14.50	7.25	CrossComm (L)	8.00 0.50 6.7
DIGI	64.00	21.88	DSC Communications	29.25 1.75 6.4
FORE	44.75	15.38	FORE Systems Inc.	40.00 2.75 7.4
GDC	21.88	9.13	General Datacomm Inds.	11.88 0.00 0.0
GSX	42.25	28.00	General Signal Networks (H)	41.00 -0.63 -1.5
GTE	49.25	36.63	GTE Corp.	39.00 -0.88 -2.2
LU	41.13	29.75	Lucent Tech. (H)	41.13 1.75 4.4
MADGF	48.63	9.13	Madge Networks NV	9.63 0.50 5.5
MCIC	31.13	22.38	MCI Communications Corp.	27.63 0.25 0.9
MNPI	34.50	5.50	Microcom Inc.	9.44 1.00 11.9
NETM	34.00	7.63	NetManage Inc.	9.00 0.63 7.5
NTRX	10.88	3.63	Netrix Corp.	7.75 -0.13 -1.6
NCDI	10.25	2.88	Network Computing Devices	5.13 -0.19 -3.5
NWK	42.00	11.13	Network Equipment Tech.	13.25 1.00 8.2
NETG	27.63	15.00	Network General	22.88 1.00 4.6
NN	74.25	25.00	Newbridge Networks Corp.	68.50 0.50 0.7
NT	55.88	31.50	Northern Telecom Ltd.	55.50 3.38 6.5
NOVL	80.38	10.00	Novell Inc. (L)	10.63 0.25 2.4
NYN	59.25	42.00	Nynex Corp.	43.75 -0.88 -2.0
OCTL	31.50	12.63	Octel Communications Corp. (H)	29.50 0.25 0.9
ODSI	43.25	16.50	Optical Data Systems Inc.	17.75 -0.75 -4.1
PAC	35.25	25.88	Pacific Telesis	34.00 0.38 1.1
PCTL	44.72	20.75	Picturetel Corp.	35.88 2.38 7.1
PTON	9.88	2.38	Proteon Inc.	3.25 -0.25 -7.1
RACO	7.13	3.50	Racotek Inc.	4.75 0.63 15.2
RETX	10.88	1.81	Retix	8.06 0.75 10.3
SBC	60.25	46.00	SBC Communications	48.88 0.38 0.8
SFA	20.38	11.38	Scientific Atlanta Inc.	14.75 0.38 2.6
SHVA	87.25	21.13	Shiva Corp.	60.00 1.88 3.2
FON	45.50	29.25	Sprint Corp.	41.00 1.13 2.8
SMSC	73.50	10.25	Standard Microsystems Corp.	13.25 -0.19 -1.4
TBIT	13.88	2.38	Telebit Corp.	13.00 -0.13 -1.0
USRX	105.50	32.75	US Robotics	66.00 0.38 0.6
USW	48.38	27.25	US West Inc.	30.13 0.38 1.3
XIRC	17.50	8.88	Xircom	15.25 0.25 1.7
XYLN	76.00	34.00	Xylan Corp.	51.63 6.25 13.8
PCs and Workstations				UP 6.34%
AALR	10.38	5.88	Advanced Logic Research	8.25 0.13 1.5
AAPL	42.50	16.00	Apple Computer Inc.	23.25 2.56 12.4
ASTA	11.25	4.00	AST Research Inc.	4.75 0.00 0.0
CPQ	66.38	35.88	Compaq Computer Corp. (H)	64.75 4.63 7.7
DELL	87.50	23.00	Dell Computer Corp. (H)	87.50 13.38 14.9
GATE	50.13	18.00	Gateway 2000 Inc. (H)	49.88 3.25 7.0
HWP	57.75	36.88	Hewlett Packard Co.	48.88 2.38 5.1
MUEI	29.88	8.75	Micron International Inc.	19.38 1.00 5.4
NIPNY	70.75	49.88	NEC America	54.88 1.50 2.8
SGI	38.75	20.00	Silicon Graphics	24.13 1.00 4.3
SUNW	67.13	26.38	Sun Microsystems Inc.	61.75 4.88 8.6
Large Systems				UP 3.70%
AMH	13.50	6.75	Amdahl Corp.	9.50 0.00 0.0
DGN	19.13	8.88	Data General Corp.	13.38 1.00 8.1
DEC	55.50	30.50	Digital Equipment Corp.	41.63 -0.13 -0.3
IBM	128.88	83.13	IBM	124.38 2.13 1.7
MIDD	20.25	6.50	Meridian Data Inc. (L)	7.25 0.13 1.8
NETF	7.13	2.63	NetFrame (L)	2.94 0.31 11.9
SQNT	23.63	10.13	Sequent Computer Sys.	12.75 0.50 4.1
SEQS	8.13	1.88	Sequoia Systems Inc.	2.25 0.00 0.0
SRA	36.13	16.63	Stratus Computer Inc.	18.75 0.38 2.0
TDM	15.25	8.38	Tandem Computers Inc.	12.25 1.25 11.4
UIS	9.13	5.38	Unisys Corp.	6.00 0.00 0.0
Software				UP 4.37%
ADBE	74.25	28.50	Adobe Systems Inc.	37.75 6.13 19.4
AMSWA	8.75	3.63	American Software Inc.	5.56 0.19 3.5
APLX	42.50	8.25	Applix Inc.	28.75 -0.63 -2.1
ARSW	82.75	28.75	Arbor Software	42.00 -0.75 -1.8
ADSK	50.00	18.50	Autodesk Inc.	25.69 -0.44 -1.7
BGSS	50.00	29.75	BGS Systems Inc.	45.25 0.00 0.0
BMCS	85.75	32.50	BMC Software Inc. (H)	82.00 -1.38 -1.6
BOOL	26.75	19.38	Boole and Babbage	25.75 0.63 2.5
BORL	21.25	6.06	Borland Int'l Inc.	7.00 -0.25 -3.4
BOBJY	55.50	11.75	Business Objects	15.00 0.88 6.2
CAYN	11.88	4.00	Cayenne Software Inc.	4.25 -0.38 -8.1
CYE	27.88	14.13	Cheyenne Software Inc.	20.00 0.63 3.2
COGNF	28.75	9.75	Cognos Inc. (H)	26.00 1.25 5.1
CA	62.75	24.88	Computer Associates (H)	61.88 2.25 3.8
CVN	13.50	5.75	Computervision Corp.	9.13 1.38 17.7
CPWR	46.50	15.50	Compuware Corp. (H)	45.00 1.00 2.3
CSRE	32.00	10.75	Comshare Inc.	15.31 -3.19 -17.2
COSFF	19.13	8.25	Corel Corp.	9.13 -1.13 -11.0
DWTI	13.75	3.25	Dataware Technologies Inc.	3.75 0.00 0.0
FILE	67.00	20.00	Filenet Corp.	22.75 -0.25 -1.1
FRTE	81.75	24.75	Forte Software	38.00 7.25 23.6
FTPS	40.63	5.88	FTP Software Inc.	7.50 0.38 5.3
GPTA	10.50	3.00	Gupta	3.63 0.00 0.0
HUM	18.88	15.00	Hummingbird Comm. Ltd.	20.88 0.13 0.6
HYSW	28.38	9.75	Hyperion Software Corp.	15.88 1.88 13.4
IRIC	16.25	10.00	Information Resources	12.50 -0.63 -4.8
IFMX	36.75	16.88	Informix Corp.	28.13 1.00 3.7
INGR	26.75	8.63	Intergraph Corp.	10.63 0.19 1.8
LEAF	12.63	2.56	Interleaf Inc. (L)	3.38 0.56 20.0
ISLI	22.25	7.50	Intersolv Inc.	7.88 -0.38 -4.5
INTU	89.25	27.25	Intuit Inc.	31.38 1.13 3.7
LGWX	22.25	7.75	Logic Works (L)	8.25 -0.81 -9.0
MAPS	24.00	7.50	MapInfo Corp.	10.25 -0.13 -1.2
MATH	9.25	4.63	MathSoft	5.25 -0.88 -14.3
MCAF	71.50	17.63	McAfee Associates (H)	71.00 4.00 6.0
MENT	22.88	10.88	Mentor Graphics	12.06 -0.25 -2.0
MFGY	15.00	8.25	Micro Focus	12.88 1.88 17.0
MGXI	18.63	8.50	Micrografx Inc.	8.50 -2.38 -21.8
MSFT	137.88	79.88	Microsoft Corp. (H)	137.88 8.19 6.3
DDDF	8.00	3.56	New Dimension Software Ltd.	5.25 -0.75 -12.5
ORCL	44.25	23.38	Oracle Corp. (H)	44.25 3.00 7.3
PMTC	52.38	25.88	Parametric Technology (H)	50.50 -0.50 -1.0
PARQ	14.63	3.88	ParcPlace Systems Inc. (L)	3.88 -0.25 -6.1
PSFT	81.38	24.25	Peoplesoft (H)	80.50 9.25 13.0
PTEC	20.38	9.88	Phoenix Technologies	17.63 1.13 6.8
PSQL	12.75	3.13	Platinum Software	10.00 0.00 0.0
PLAT	24.63	9.25	Platinum Technology	11.00 -0.25 -2.2
PRGS	38.00	12.13	Progress Software Corp.	15.75 -0.75 -4.5

Exch	52-Week Range			Sept 20 Wk Net Wk Pct 2 P.M. Change Change
RNBO	25.50	14.63	Rainbow Technologies Inc.	18.25 -0.50 -2.7
RBCB	61.00	18.25	Red Brick Systems Inc.	22.25 0.25 1.1
ROSS	8.13	2.19	Ross Systems	5.44 0.38 7.4
SAPE	58.25	29.25	Sapient Corp.	41.00 -0.75 -1.8
SCOC	12.13	5.50	SCO Inc.	6.75 -0.25 -3.6
SDTI	109.00	22.13	Security Dynamics Tech.	68.25 1.00 1.5
SKEY	50.88	13.38	Softkey International Inc.	18.00 1.13 6.7
SPCO	4.75	1.19	Software Publishing Corp.	1.56 -0.06 -3.8
SQAK	39.75	16.00	SQA Inc.	25.75 0.63 2.5
SOTA	19.75	9.00	State of the Art	13.75 -1.00 -6.8
SSW	81.38	40.00	Sterling Software Inc.	75.00 5.13 7.3
SDRC	37.38	15.00	Struct. Dynamics Research	25.00 -0.31 -1.2
SYBS	39.75	14.13	Sybase Inc. (L)	16.50 1.63 10.9
SYMC	33.25	8.75	Symantec Corp.	10.88 1.00 10.1
SNPS	50.50	23.00	SynOpsys (H)	48.00 0.63 1.3
SSAX	30.63	8.25	System Software Assoc.	11.38 0.25 2.2
SYSF	36.50	4.38	Systemsoft Corp. (H)	34.75 -0.13 -0.4
TRUV	9.63	4.38	Truevision Corp.	4.88 0.00 0.0
VIEW	17.50	9.63	ViewLogic Systems	11.31 -1.31 -10.4
VMRK	18.75	5.75	VMark Software Inc.	7.13 -0.25 -3.4
WALK	12.75	6.25	Walker Interactive Systems	11.63 1.25 12.0
WALL	27.50	13.00	Wall Data Inc.	24.00 0.25 1.1
WANG	26.13	14.50	Wang Laboratories Inc.	19.13 1.25 7.0
Internet				UP 13.07%
AOL	71.00	24.50	America On-Line	35.13 9.88 39.1
BBN	48.75	15.63	BBN Corp.	18.13 0.25 1.4
CSRV	35.50	10.75	Compuserve Corp.	16.38 1.75 12.0
EDFY	55.75	16.25	Edify Corp.	21.25 -3.94 -15.6
LCOS	29.25	5.75	Lycos Inc.	10.63 1.63 18.1
NETC	91.50	15.50	Netcom On-Line (L)	18.25 1.75 10.6
NSCP	87.00	24.50	Netscape Comm. Corp.	50.00 12.00 31.6
OMKT	42.25	13.25	Open Market Inc.	13.38 -1.25 -8.5
PSIX	29.00	6.75	PSINet	12.75 2.50 24.4
QDEK	39.50	5.63	Quarterdeck Corp.	8.00 1.13 16.4
RAPT	39.25	12.75	Raptor Systems (L)	15.88 1.00 6.7
SCUR	64.50	11.00	Secure Computing Corp. (L)	14.00 2.63 23.1
SPYG	61.00	12.00	Spyglass Inc.	19.13 2.38 14.2
YHOO	43.00	15.50	Yahoo! Inc.	22.50 2.00 9.8
Semiconductors				UP 11.28%
AMD	34.38	10.25	Advanced Micro Devices	14.50 1.50 11.5
ADI	30.13	17.00	Analog Devices Inc.	27.00 1.75 6.9
CHPS	15.00	7.88	Chips and Technologies	13.00 1.75 15.6
CRUS	61.13	12.63	Cirrus Logic	16.50 2.06 14.3
CY	20.75	9.13	Cypress Semiconductor Corp.	12.50 1.75 16.3
CYRX	45.38	11.50	Cyrix	13.63 1.00 7.9
INTC	97.75	49.81	Intel Corp. (H)	97.75 10.13 11.6
LSI	62.50	17.00	LSI Logic Corp.	24.00 2.88 13.6
LSCC	42.50	19.75	Lattice Semiconductor	29.75 3.25 12.3
MCRL	29.75	12.00	Micrel Semiconductor Inc.	19.00 -0.75 -3.8
MU	92.13	16.63	Micron Technology	27.50 4.00 17.0
MOT	82.50	44.75	Motorola Inc.	51.88 3.25 6.7
NSM	31.25	13.00	National Semiconductor	19.13 1.38 7.7
TXN	83.75	40.50	Texas Instruments	53.63 6.00 12.6
VLSI	39.13	10.38	VLSI Technology	14.63 1.56 12.0
XLNX	51.88	23.25	Xilinx	37.00 4.13 12.5
ZLG	46.63	14.88	Zilog Inc.	18.00 2.63 17.1
Peripherals and Components				UP 5.46%
APCC	15.88	7.88	American Power Conversion	15.25 2.13 16.2
ADPT	61.50	35.00	Adaptec Inc.	55.63 3.63 7.0
CBEX	12.88	3.00	Cambex Corp.	3.75 -0.38 -9.1
CGN	7.25	3.38	Cognitronics Corp.	4.50 -0.25 -5.3
CREAF	14.13	3.50	Creative Technology Ltd.	4.13 0.13 3.1
RACE	8.38	3.63	Data Race Inc.	7.38 -0.13 -1.7
DTM	8.88	4.13	Dataram Corp.	7.50 0.00 0.0
EMC	23.38	13.00	EMC Corp.	23.25 3.50 17.7
EMLX	21.38	6.38	Emulex Corp.	15.06 1.06 7.6
ESCC	29.00	16.50	Evans and Sutherland	22.75 1.75 8.7
EXBT	22.75	10.00	Exabyte	14.63 1.00 7.3
IISLF	4.13	1.50	Intelligent Info. Systems	2.06 0.25 13.8
IOMG	55.13	2.75	Iomega Corp.	19.13 4.50 30.8
IPLS	8.25	1.88	IPL Systems Inc.	2.06 -0.06 -2.9
KMAG	37.00	17.63	Komag Inc.	24.38 1.88 8.3
MTSI	22.25	11.25	Micro Touch Systems Inc.	17.25 0.25 1.5
PEAK	34.75	17.25	Peak Technology Group	23.75 2.00 9.2
PNCL	19.75	4.88	Pinnacle Micro Inc.	5.63 -0.38 -6.3
AQM	6.75	3.25	QMS Inc.	5.50 0.25 4.8
QNTM	26.13	10.88	Quantum Corp.	18.75 2.50 15.4
RDUSC	8.25	0.94	Radius Inc.	1.63 0.13 8.3
SEG	67.75	36.13	Seagate Technology	57.13 6.63 13.1
STK	44.13	21.75	Storage Technology	35.25 0.50 1.4
STLC	8.75	1.25	Streamlogic Corp.	2.81 -0.25 -8.2
TEK	61.88	29.75	Tektronix Inc.	40.25 2.50 6.6
WDC	40.00	14.38	Western Digital Corp. (H)	40.00 1.38 3.6
XRX	58.25	39.88	Xerox Corp.	54.38 1.25 2.4
Services				UP 4.39%
AMSY	33.38	15.38	American Mgmt. Systems	29.13 1.75 6.4
ANLY	45.50	27.25	Analysts Int'l	45.50 2.50 5.8
AUD	45.63	34.00	Auto Data Processing (H)	45.63 2.63 6.1
BDMI	61.25	23.75	BDM International Inc.	59.38 4.38 8.0
CATP	36.00	13.88	Cambridge Tech. Partners (H)	36.00 4.38 13.8
CEN	54.88	36.63	Ceridian Corp.	47.75 2.25 4.9
CDO	29.38	18.88	Comdisco Inc. (H)	28.50 -0.13 -0.4
CHRZ	54.00	11.63	Computer Horizons	28.00 -0.50 -1.8
CSC	80.75	60.75	Computer Sciences	74.63 2.50 3.5
TSK	31.88	14.63	Computer Task Group	28.25 -0.75 -2.6
CPU	54.88	12.88	CompuUSA Inc. (H)	52.38 0.88 1.7
CDAT	27.50	10.13	Control Data Systems Inc.	22.50 0.13 0.6
EGGS	13.88	5.00	Egghead Discount Software	6.13 -0.06 -1.0
EDS	59.00	43.88	Electronic Data Systems Corp.	59.00 1.13 1.9
INAC	31.88	9.13	Inacom Corp. (H)	31.75 1.50 5.0
INEL	11.50	3.50	Intelligent Electronics	8.13 1.50 22.6
KEA	47.75	18.25	Keane Inc.	45.50 1.13 2.5
MSEL	7.13	1.88	Merisel	2.06 -0.19 -8.3
MICA	18.50	7.25	Micronage Inc. (H)	17.63 2.50 16.5
PAYX	58.25	26.63	Paychex (H)	58.25 5.00 9.4
PMS	55.50	35.13	Policy Management Sys.	36.63 -3.00 -7.6
REY	27.25	16.38	Reynolds and Reynolds	26.63 2.13 8.7
SCBI	30.50	14.44	SCB Computer Tech. Inc.	18.38 0.13 0.7
SEIC	26.38	17.75	SEI Corp.	23.88 0.63 2.7
SMED	72.13	37.38	Shared Medical Systems	57.00 1.75 3.2
SSPE	30.50	17.00	Software Spectrum Inc.	29.00 -1.00 -3.3
VST	25.63	9.00	VanStar Corp. (H)	25.63 4.75 22.8
SNDT	46.75	25.25	Sungard Data Systems (H)	44.50 0.50 1.14

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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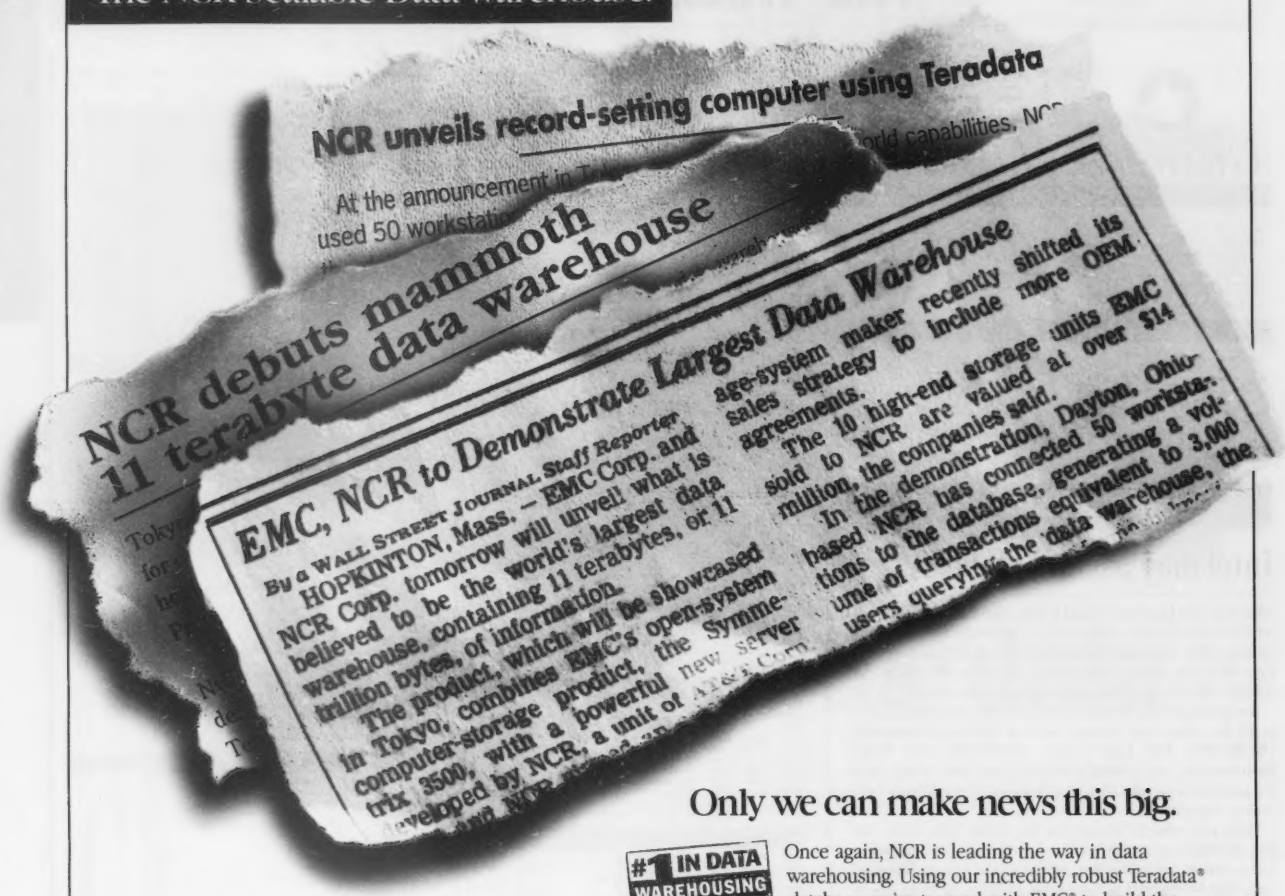

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Hyperion software

Warehouse costs scare up changes

CONTINUED FROM PAGE 1

a half-dozen information systems managers said they are turning to one or a combination of those technologies in hopes of making data warehouses less of a crapshoot for their firms. Their objective is to rein in runaway costs while making warehouses easier to build and use.

"A data warehouse can get an image of being this big black hole where data goes in and then disappears," said Jim Sutter, a data warehouse architect at Ryder System, Inc. in Miami. "But our goal isn't to build a massive data warehouse. We just want to deliver quick answers to lots of end users and to do it simple, fast and cheap."

Data warehouses are pools of historical data used in decision support and business analysis. Companies seeking a competitive edge can track things such as customer-buying patterns or sales fluctuations and use the information to guide their operations.

But centralized corporate warehouses are multiyear projects with an average price tag of $3 million, according to Meta Group, Inc. in Stamford, Conn. In response, smaller and more targeted data marts have emerged in the past two years as starter warehouses designed to prove the business value and serve as stepping-stones to a more grandiose enterprise warehouse (see chart, page 1).

But now, Sutter and others who attended the data warehousing conference said their firms may drop the whole idea of a central warehouse and depend instead on a collection of integrated data marts that support a consistent data model.

Relic of the past

Ryder, a truck leasing and logistics management company, could fit a big central warehouse into its data mart architecture if necessary, Sutter said. "But that's a thing of the past," he added. Data marts can be built and altered much faster, and packaged offerings that start at less than $100,000 make it possible for individual departments to give projects the green light, Sutter said.

The Boeing Co.'s commercial airplane group is also mulling leaving the central data warehouse piece out of the puzzle, said Bevan Goff, manager of IS architecture and standards at the Seattle-based unit. However, one concern is that feeding data directly to multiple data marts could overwhelm Boeing's production systems, Goff added.

Conference attendees said the Web also has an alluring potential to simplify data warehousing, as does Microsoft Corp.'s Windows NT (see story at right).

Tying warehouses and data marts to Web browser clients should reduce software distribution, training and technical support headaches, customers said. Browser access could also open up data warehouses to a much wider range of end users, including field sales forces.

"It really puts power in their hands," said C. Coleman Darby, a commercial IS development consultant at Hoechst Marion Roussel, Inc. in Kansas City, Mo. The pharmaceuticals maker downloads slices of data to its sales force's laptops, "but you're limited to the space on their hard drives," Darby said. "The Web would eliminate that bottleneck."

Dodson Group, a Kansas City-based insurance holding company, also may let agents browse parts of its data warehouse. Management is nervous about the potential for rivals "to hack into our data," said Rob Loethen, manager of database administration. "But distributing information quickly to the field force would obviously be a competitive advantage."

NT pries warehouse door open

Microsoft's Windows NT is starting to make inroads in data warehousing.

NT-based warehouses still may not be able to handle as much data as mainframes and Unix systems, but the draw for customers is the cost savings and their familiarity with Windows.

Several surveys done by Meta Group at data warehousing conferences in the past 18 months show Windows NT development plans expanding from a sprinkling of respondents to about 25%, said Aaron Zornes, a Meta analyst.

AVCO Financial Services in Irvine, Calif., plans to jump on the NT bandwagon for proposed data marts, which are expected to go into development this year. "The cost dynamics are way too attractive compared with a Unix box and database," said Frank Natalizio, AVCO's systems director.

The combination of NT, a PC server and Microsoft's SQL Server database could end up being as little as one-fifth the cost of a Unix setup, Natalizio said.

AVCO has also anointed NT as its all-around server of choice and wanted to include data warehousing under the same development umbrella.

— Craig Stedman

Retail project cuts supply chain costs

CONTINUED FROM PAGE 1

mation about everything — from planned changes in store layouts to precise meteorological data about pollen counts and when flu season will hit a certain region — the two companies have eliminated a full 2 ½ weeks from the supply chain for a test product, Listerine. They have also halved order cycle times and eliminated incidents of a product being out of stock.

Executives from the two companies last week disclosed results of the pilot test to a group of about 30 retailers and manufacturers at a CFAR briefing in Boston. The plan is to expand the CFAR pilot to include at least 200 other companies by year's end. Sponsors hope CFAR will ultimately become the industry's forecasting standard.

Other CFAR sponsors are Benchmarking Partners, Inc., a consulting firm in Cambridge, Mass.; SAP AG, which recently announced a retail version of its enterprise R/3 system; and Manugistics Group, Inc., a Rockville, Md., vendor of planning software.

Sharing data across the supply chain isn't entirely new. One way or another, many retailers have shared point-of-sale data with manufacturers for the past several years.

Differences abound

CFAR is different because it offers a standard set of processes and a protocol for all parties to share a much wider range of data over the Internet. From there, they can negotiate before agreeing on a forecast.

The protocol goes beyond traditional electronic data interchange (EDI); it allows partners to communicate interactively about forecasts. EDI enables partners to send and receive purchase orders and confirmations in a standard format. EDI messages must be sent over a value-added network. CFAR uses the Internet, which is cheaper.

Today, by comparison, manufacturers and retailers develop their own internal forecast figures, which can vary wildly even across a company's own sales, marketing, finance and manufacturing organizations.

"Forecast ownership is generally sprinkled throughout a manufacturer with everybody working with a different number," said Jim Podowski, general manager of Warner-Lambert's customer service team.

Technologically, the Internet-based CFAR protocol poses no major implementation issues, according to its developers. Instead, the major challenge lies in creating links to in-house scheduling and manufacturing systems.

"IS groups have made huge investments in systems to figure out their internal strategies. Now comes the investment in tying together with their customers," said Ted Rybeck, president of Benchmarking Partners.

Warner-Lambert is currently loading forecast data it receives from Wal-Mart into an enterprise demand planning system from Manugistics Group. Eventually, this data will flow directly into an R/3 system now being implemented at the $7 billion consumer packaged goods company.

Safety first

Retailers and manufacturers compensate for poor forecast numbers with safety stock, causing overall costs to soar. Today, experts estimate that buffered inventories account for about $700 billion of today's $2.3 trillion retail supply chain.

"This will allow retailers to pass forecast data directly into our manufacturing system," said Cathy J. Kleiven, systems project leader for the CFAR initiative.

Kleiven said she expects security concerns to dissuade some retailers from sending forecast data over the Internet. As a result, Warner-Lambert will continue to accept forecast data in EDI format, she said.

Interactive 'net haggling

The CFAR Internet Protocol was developed by Benchmarking Partners in conjunction with SAP AG. Manugistics Group also sponsors CFAR along with Wal-Mart and Warner-Lambert.

"It's actually a very simple Internet Protocol that provides a standardized way for manufacturers and retailers to share information back and forth in order to agree on a sales order for a particular product," said Jim Kirkley, technology head of the CFAR project.

"You can send what amounts to the guts of a spreadsheet, and you can associate commentary with that. Then you can add and change that commentary and send it back," he said.

Companies can download the CFAR specification from Benchmarking Partners' site on the World Wide Web (www.benchmarking.com).

— Julia King

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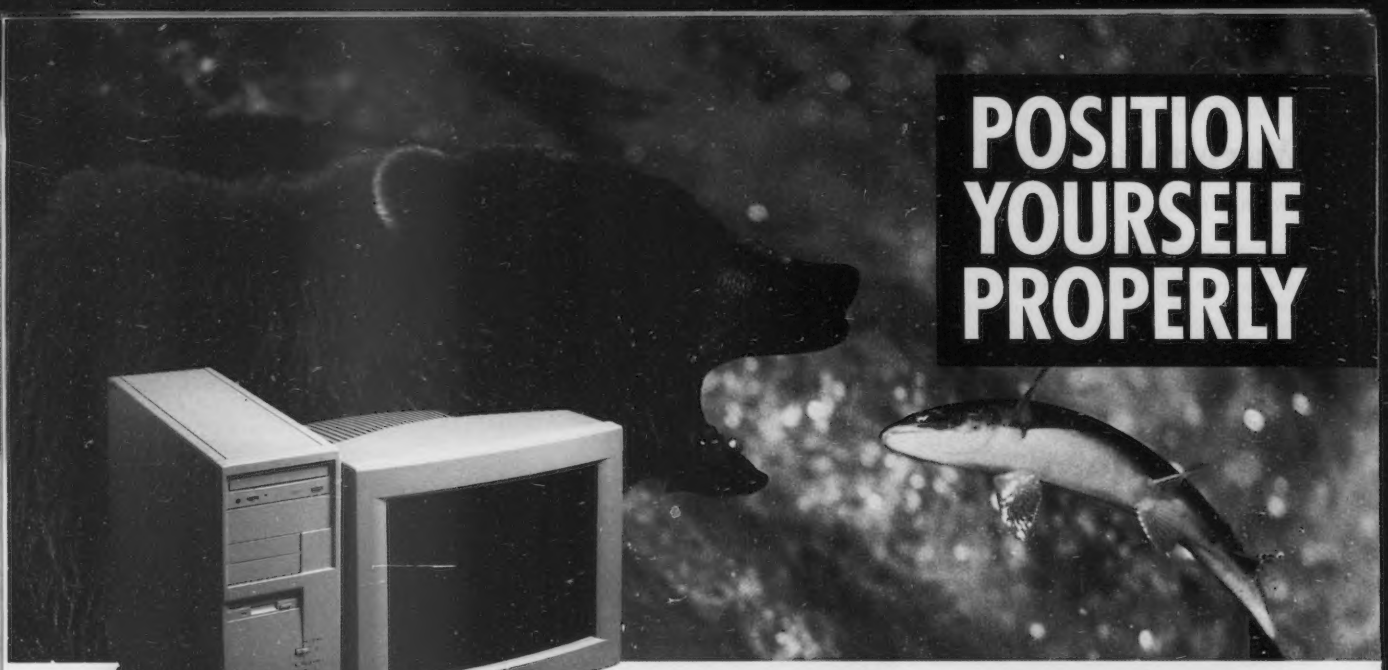

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David Coursey

Egad! Larry Ellison just might be right!

It pains me greatly to admit it, but I owe an apology to — I can hardly bring my fingers to type the letters — Larry Ellison. Now, I've got nothing against Oracle; I've only been in the company's offices a few times. On the other hand, those experiences were scary enough that I haven't been (invited) back.

Still, whatever you think about Ellison and Oracle, you must admit Larry didn't get all that money — or the expensive cars, Japanese art, etc. — by being a fool. And when it comes to his latest cause, I must say I underestimated him.

Enter the Network Computer, or NC.

An NC can be almost anything, as the Oracle-produced "standard" seems to require only a TCP/IP stack and the ability to run Java-based programs. But the term usually refers to hardware specifically designed for the purpose. Acorn Computer in the U.K. is the default leader in this not-yet-existent market, although at least a dozen companies are expected to play.

The truth is, the NC isn't a bad idea, but not for the market you might expect. While the entire world has been hyped up to buy an NC as a family Christmas gift, I've decided it is a more interesting option for corporate IS departments.

The NC may or may not make it as a home device; I can make a sound argument either way. The surprise is that it offers an interesting option to firms with Unix terminals and/or client/server applications — which is to say, most companies.

Multifacted

The NC could provide a sort of universal standard for target machines. That is, an application that runs on a stand-alone NC also will run on Windows, NT, Unix, OS/2, the Macintosh and anywhere else Java may splash.

That reality of one application/many clients ought to be interesting enough. But NCs also make users full participants in corporate intranets — something a Unix terminal will be hard-pressed to achieve — and will run Java productivity applets as they are developed.

NCs also will talk to a variety of servers — anything that will pour Java onto the network.

The biggest benefit of corporate NCs will be a reduction in lifetime cost of ownership. Using Java and a lightweight client application, virtually all the administration and software changes can be made at the server. No more running around loading software on every PC in the company. No more loading applications across the network.

Lining up against this idea is Microsoft, which seems to believe the world will stop spinning unless Windows arrives on every desktop just in the nick of time. Alternatively, if people buy enough NCs, Microsoft will rush out front and claim to have supported the idea all along. I don't think Microsoft will lose many sales as a result of corporate NC purchases, but that's something Bill Gates and I will have to agree to disagree on.

Here's my challenge: Think about how you might use a $1,000 box (including monitor) that runs Java, a browser and some plug-ins, attaches to your network, doesn't have a floppy disk and *maybe* has a hard drive. Would you use it as a terminal replacement? A desktop if the right applications come along? A client/server workstation?

An NC can be all of these and probably some more I haven't thought of. Drop me a line and tell me if I'm crazy.

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Charles Babcock

Chaos brews beneath client/server facade

Client/server and data warehousing are widely accepted trends. The advocates of one don't think of themselves as being at odds with the other. But they are.

We're already familiar with the hidden costs of maintaining cross-platform client/server systems, but there's another mix-and-match issue hidden under the hood.

Client/server systems are proliferating databases and data formats without any thought to their future use in the enterprise. When it's time to capture the local system data and put it in a data warehouse, these systems may be a roadblock.

Relational databases bloomed with the advent of client/server computing. Because they all worked with SQL, business users assumed the databases were all alike and insisted on using their favorite brand. But data access via standard SQL is different from each system using standard internal data formats. These internal formats vary from system to system, an issue complicated by the variety of business concepts behind the database designs. The data that a client/server system in marketing sees as representing the customer looks entirely different when viewed through the lens of hot-line support or finance.

But the data warehouse is supposed to contain all relevant customer information. The IS team building the warehouse must reintegrate the scattered pieces. Chances are, the documentation on the client/server system is outdated, if it exists at all. The team can turn to the system's designer for help — if he still works for the company.

If he does, he'll probably warn that the system has changed since it was first implemented. At the request of the user, it continues to change on almost a monthly basis. Extracting data for the data warehouse will mean the data in the warehouse is becoming disparate — it represents different things at different times and can't be reliably connected to other data.

"With client/server, departments took destiny into their own hands and gained autonomy of processing. But we gave up data cohesiveness," says Bill Inmon, originator of the data warehouse concept and executive vice president of technology at Prism Solutions, Inc., a data warehouse firm.

"Control was always difficult, but with client/server it became impossible," he says.

The relational database, with its flexible access methods, relieved us of the pain of dealing with ancient file systems and IBM's IMS, the rigidly hierarchical system in which much mainframe data is stored. But the proliferation of databases is inflicting new pain on IS.

In an earlier era, data administrators documented what the data represented in each system and defined it, which helped with the construction of the next system. But this role was widely phased out in the waves of downsizing.

Until a better solution is at hand, IS must try to resurrect the role of the data administrator and impose a requirement for documented, defined data with each client/server system.

But be warned. If client/server development goes on outside your department, the developer is striving for quick business results. His requirements change frequently, and getting him to accept an added task will prove as difficult as ever.

The proliferation of databases in client/server systems is brewing a Herculean task of reconciling different data definitions and formats. But without such a reconciliation, the data warehouse won't be an enterprise system.

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computerworld index

Compiled by Laura Hunt and Mitch Betts

Generation X s favorite topics for online chat: **Music, teens, romance, film and sports**

Least-favorite topics: **Politics, environment, world affairs**

Cost to send **advertising mail** (including postage and printing) to 1 million people: **$827,000**

Cost to send **online advertising mail** (spam) to 1 million people: **$1,499**

Presidential preferences of a **nationwide** sample (Sept. 5):

- **Clinton: 53%**
- **Dole: 36%**
- **Perot: 5%**

Presidential preferences of high-tech engineers (Aug. 26):

- **Clinton: 38%**
- **Dole: 46%**
- **Perot: 8%**

*Does not equal 100% due to other responses

Number of **voters registered** through NetVote 96 online voter registration (as of Aug. 15): **22,000**

Percent of U.S. households **that have PCs** (1995): **29%**

Percent of U.S. households with **income over $60,000 that have PCs:** **65%**

Percent of U.S. households with **income under $30,000 that have PCs:** **12%**

Time PC owners use their PC per week (1996): **11.4 hours**
In 1995: **8.5 hours**

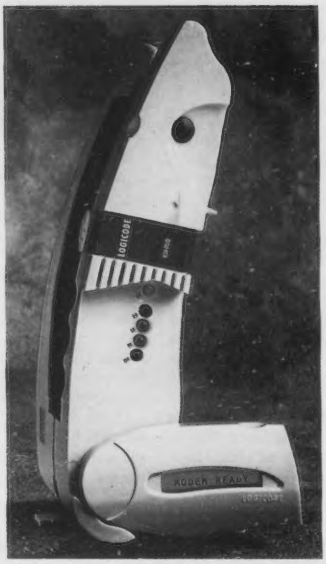
People who say the data on their PC is worth **more than $10,000:** **41%**

People who say the data on their PC is **priceless :** **17%**

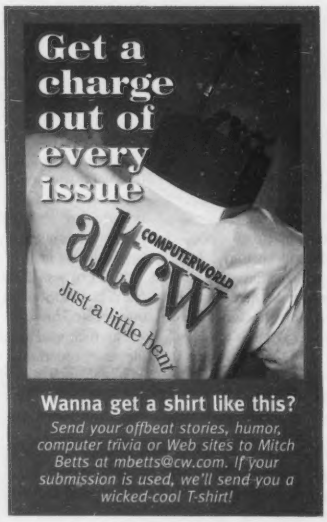
People who **back up** their data: **50%**

Financial investment advisors who say a computer could do their work **better than they do it:** **9%**

Sources: *Business Week*, New York; *USA Today*, Arlington, Va.; *Electronic Engineering Times*, Manhasset, N.Y.; www.netvote96.com; WebGenesis, Inc., Ithaca, N.Y.; Dataquest, San Jose Calif.; Odyssey, San Francisco; Surefind, Pittsburgh; www.touchstonefunds.com.



Logicode Technology *in Los Angeles is pushing the design frontier with its line of Quicktel II voice/data/fax modems. This model, which costs $399, has a built-in speakerphone, microphone, answering machine and a flip-out, 16-character status display at the bottom. The novel-looking modems are enclosed in lightweight, anodized aluminum and gray ABS plastic.*



Wanna get a shirt like this?

Send your offbeat stories, humor, computer trivia or Web sites to Mitch Betts at mbetts@cw.com. If your submission is used, we'll send you a wicked-cool T-shirt!

Inside Lines

Does it come with a straw?

"Hardware: This is the part of the computer that stops working when you spill beer on it" — from the new book, *Dave Barry in Cyberspace*. Excerpts from the Barry book are appearing on the Yahoo Internet Life page (www.yil.com/yil/dbarry/) through Oct. 9.

The incredible lightness of Be-ing

Apple Computer and start-up Be reportedly called off acquisition talks that would have incorporated Be's BeOS operating system into Apple's future Mac OS development efforts. The talks stalled when the beleaguered Cupertino, Calif., computer maker made an offer of $5 million. Be's asking price was $50 million, according to sources close to both companies.

Watch out for the Wolf

Don't believe what you hear about Microsoft slipping its delivery date for its Wolfpack clustering technology for Windows NT Server. "Development is on target, and we're set to go to beta by November," said one Microsoft engineer in Redmond, Wash., speaking on the condition of anonymity. "If all goes well, we'll ship Wolfpack in Q1. And we're targeting the second half of '97 to launch Phase Two of our strategy — support for clustering among 16 servers." Meanwhile, Microsoft plans to give its developers yet another sneak peak at Cairo — its full-blown enterprise directory services database engine for Windows NT Server 5.0 — at its upcoming Professional Developers Conference the week of Nov. 4.

The oldest profession goes hi-tech

Chicago police recently busted an alleged prostitute after arranging a rendezvous via computer. Officers responded to an online advertisement through electronic mail, borrowing the account of a volunteer. They set up the meeting at a hotel, then law enforcement proceeded in the traditional way.

Corel's indigestion of WordPerfect

Corel's $80 million acquisition of Novell's WordPerfect group caused a little heartburn for the Ottawa-based company last week. Seems a slight, er, miscommunication between the folks who print up the manuals and those who set product ship dates ended up costing Corel $15 million in third-quarter revenue, which the company will be able to recoup next quarter. Meanwhile, Corel's investor relations department sent out a press release on the financial snafu — sans PR approval — that cited engineering problems and bugs in the software as the cause of the problem.

Just say no to sales pitches

There was some grumbling in the aisles at last week's DCI Data Warehousing Conference in Phoenix about the almost complete lack of user presentations on the agenda. Only three of the 74 sessions in the main portion of the conference had users as speakers; the rest were wall to wall with vendors, consultants and systems integrators. Taking the matter to heart, sponsors Digital Consulting and Meta Group promised to shake things up and put users at the top of the priority list for their next conference in February.

Last week's Networld/Interop attendees could have some fun at an on-site bookstore, where the technology-overwhelmed could buy the Dilbert Flip Tie — a red-and-black-striped tie wired to curve upward like the neckwear of the comic strip hero. If you have some piece of news we'd flip over, send it to News editor Patricia Keefe at patricia_keefe@cw.com, or call her at (508) 820-8183. No, you won't get the tie — just our gratitude.

"I started running OS/2 Warp Server on all my networks and guess what?

My rainy days are over."

Consolidate

It was time to think about consolidating the company's mixed environment network onto one operating system. That's why Steve Conaway, Director of Computer Services at the Financial Times, decided to check out the new release of OS/2® Warp Server.

In no time at all, Steve was waxing poetic over OS/2 Warp Server's ability to handle blockbuster-sized databases and make Internet and intranet access a breeze. He was also impressed with all the advanced printing capabilities and management features that simplified the running of both his network and his life. Which is why Steve now thinks of OS/2 Warp Server as his umbrella network operating system.

Find out what got Steve so excited. Call 1 800 IBM-2468, ext. EA130, or visit us at www.software.ibm.com/info/ea130 for details. With special offers of additional software (valued at up to $1,400) available when you buy OS/2 Warp Server and Lotus Notes® before September 30, 1996, there's really no better way to demonstrate fiscal responsibility.

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